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S. F. Dudley

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Editorial.

SURGEON VICE-ADMIRAL SIR SHELDON F. DUDLEY, *K.C.V.O., C.B.*, M.D., D.P.H., D.T.M., F.R.C.P. (Lond.), F.R.C.S. (Edin.), F.R.S., *K.H.P.*

Medical Director-General of the Royal Navy.

It is fitting that we should pay a tribute to Sir Sheldon Dudley on his relinquishing the appointment of Medical Director-General which he has held for the past four and a half years.

Born in a naval medical milieu in 1884, Dudley has been steeped all his life in the Service where he has served thirty-nine years. Twelve of them at sea. Educated at Merchant Taylors' School and St. Thomas's Hospital, he joined the Royal Navy in 1906. His earliest appointments were to *Queen*, *Sandpiper* and *Commonwealth* in the Mediterranean, China and Home Fleets respectively. Later he served in H.M. Hospital Ship *Urania*. When the first German war broke out he was pathologist and venereologist at R.N. Hospital, Chatham. Later he became P.M.O. of the Royal Naval Air Service in Dunkerque and of H.M.H.S. *Isis*. Between the wars he was pathologist at Haslar and at the R.N. Medical School, Greenwich, where he also lectured on Tropical Diseases. Returning to sea he joined *Euryalus* in the Mediterranean but was afterwards appointed to *Dunedin* and then *Dragon* on the New Zealand Station. Promoted to Surgeon Captain he became Director of Medical Studies and Naval Hygiene at the Medical School. Later he became medical specialist at Chatham. As Surgeon Rear-Admiral he was at first Deputy M.D.G. and in 1938 Medical Officer in Charge, R.N. Hospital, Chatham. On July 1, 1941, he was appointed M.D.G. and promoted to Surgeon Vice-Admiral.

No one has a better claim than himself to the title of specialist in maritime or nautical medicine. In this way he is a direct and worthy descendant of such past naval sea surgeons as Lind, Blane and Trotter, and Dudley's name has an assured place in the roster of the great exponents of marine medicine. He has versed himself and studied in turn venereology, general medicine, hygiene, aviation medicine, pathology, and tropical disease. One may compare his versatile achievements with those of John Richardson, Thomas Huxley, William Burke, Robert McCormick and other nineteenth century naval surgeons who contributed so much to natural history. Succession in the apostolic succession of the oldest tradition of naval medicine, he can rightly be considered to-day in the very spearhead of medical progress, having been all his life an exponent and practitioner of social medicine. Dudley's chief interest has been epidemiology, as approached from the aspects of bacteriology and histology.

His papers upon the carrier problem, droplet infections, immunity, and diphtheria in the Navy are classics, and have been associated with many marks of professional recognition such as the Lyddell Memorial Prize, the Neech Prize, the Gilbert Blane Gold Medal, the Chadwick Gold

Medal [illegible] the Mili[illegible] the [illegible] Natural [illegible] Antit[illegible] the Blood [illegible] *Lancet* 1922 3 204) [illegible] hypoth[illegible] transmission. It was [illegible] elected to the Royal Society [illegible] [illegible] is one may [illegible]

[illegible] the past forty years [illegible] of the [illegible] [illegible] with the [illegible] the extension of the [illegible] [illegible] Medical Re[illegible] [illegible] Naval Personnel R[illegible] [illegible] the Admiralty [illegible] [illegible] Harvey [illegible] [illegible] R.N. [illegible] [illegible]

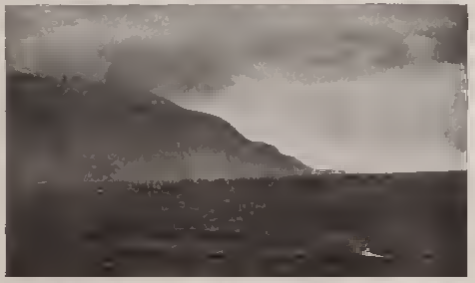
[illegible]

Articles

THE HEALTH OF THE TRISTAN POPULATION OF TRISTAN DA CUNHA

[illegible]

[illegible] largest of [illegible] It is in the South Atlantic [illegible] West. [illegible] 40 to 30 [illegible] [illegible] 2,000 ft high excepting the North [illegible] plateau about [illegible] Here lies the [illegible] the small settlement which is now known as H.M.S. *Atlantic Ocean* [illegible]



[illegible]

[illegible] May 1942 and July 1944 the [illegible] the [illegible] the minimum 39.6° F. The W[illegible] South [illegible] Rainfall is about 60 in. annually and [illegible] year the [illegible] for the whole year being [illegible] figures are low [illegible] of orographic cloud which [illegible] about 800 ft above the settlement plateau. The [illegible] months in January and February. The record daily [illegible] with an average [illegible] the dark year of 3,6 hours. The [illegible] and in frequent gales which limit activity and render [illegible] petrolines well [illegible]

History. The permanent settlement has been in existence since 1816. [illegible] British and Boer [illegible] people [illegible] seal from the Cape [illegible] here for the [illegible] Napoleon from St. Helena and [illegible] the island by American privateers. When the garrison [illegible] Corporal William Glass, Royal Artillery, and three [illegible] men [illegible] to Britain. From this nucleus has grown the [illegible]

[illegible] added to the population [illegible] of the Skipper [illegible] 1828. Some of the original [illegible] to 96 in 1856. In the [illegible] 28. An addition of [illegible] who had made a trip in a whaler [illegible] By 1880 the population was 168 [illegible] in 1885 there was a gain of [illegible] the population [illegible] to 80.

[illegible]—[illegible] Hunter [illegible] Tristan da Cunha. [illegible]

In 1892 the last fresh Irish blood was introduced [illegible] *Hall* which was lost off the island. Since then [illegible] 1896) two whole waves. The population in 1944 [illegible] from

(1) William Glass

[illegible] Hastings, England, [illegible] *Lady Leith* under the [illegible]

(2) Alexander [illegible] Dutch [illegible] 1885

(3) [illegible] Irish [illegible] The Skipper [illegible] 1841 [illegible] in unsuccessful trip in the Antarctic [illegible] owners

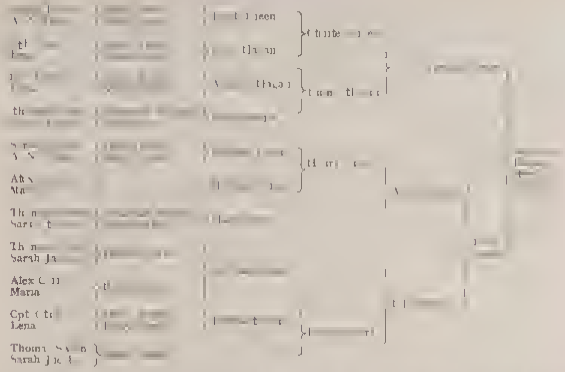
(4) Thomas Rogers, an American whaler [illegible] 1886. He [illegible] married one of Glass's daughters [illegible] to his name

(5) [illegible] Italians Andrea Repetto and Gaetano [illegible]

With the exception of Gaetano Lanarello, the [illegible] Italians [illegible] the islanders are descended from [illegible]

[illegible] second [illegible] absorbing and [illegible] With the [illegible] of A. B. Crawford's XXI and the [illegible] 1871 and 1880 in particular the population [illegible] A specimen chart of these pedigrees [illegible]

TABLE I



The People [illegible] The degree [illegible] with Indian [illegible] intermediate [illegible] cottage [illegible] girls well [illegible] youth [illegible] black ones blacker [illegible]

Both men and women [illegible] adolescents are rather [illegible] deterioration in the standard [illegible] were able to carry on trade in [illegible] whom carried stores for the purpose [illegible] advent of steam and the disappearance [illegible] upon their own efforts by which [illegible] has enabled them to continue [illegible]

The people are well [illegible] those affected by asthma [illegible]

Their speech is English [illegible] ignorance of spelling and [illegible] passed out of use in this [illegible]

Mental disturbances [illegible]

The people had a simple [illegible] oil from the mountain [illegible] poor are those fishing [illegible] food. Most of the [illegible] facilities. There is no [illegible] to them by passing ships. [illegible] trade. All [illegible] have been [illegible] dried duck [illegible]

[illegible] they [illegible] easily than they [illegible] to fears [illegible] as elsewhere [illegible] of others [illegible] there is [illegible]

Mental [illegible] between [illegible] They [illegible] [illegible]

[illegible] lack of [illegible] for long [illegible]

[illegible] are single [illegible] three [illegible] considerably [illegible]

[illegible] village [illegible] of the [illegible] the lowest [illegible] think [illegible] Sanitation [illegible] about the [illegible] the [illegible] clothes [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] they all [illegible]

[illegible]

Surgeon Walter Reed [illegible] in 1876 [illegible] that the islanders appeared to be [illegible] introduced among them by shipping [illegible] the islands.

Mr. G. F. Collingwood, H.M.S. [illegible] 1895 was [illegible] less enthusiastic. He was of the opinion that the inhabitants [illegible] good physique, one could expect [illegible] the healthiness of their surroundings. He was [illegible] island for [illegible] which were of a bronchial nature.

Since the beginning of the [illegible] reports have been made by medical [illegible] and a medical report was published in 1920 by their Surgeon, Lieutenant-Commander H. St. Clair Colson, R.N., who was then in H.M.S. *Vindex*. From this [illegible] it is possible to obtain some information. One of the best [illegible] was Dr. D. H. Simpson, grandson of the original settler, who at the age of 87 was still possessed of his faculties. He provided much information [illegible] which it was possible to verify or not.

Corporal Glass himself died [illegible] of the Royal Gibraltar Regiment by suicide. The cause of death of the [illegible] is not known.

The register of deaths has been kept since 1892. From that date until 1942 there was a total of 32 deaths. These are summarized in Table II.

TABLE II

Stated cause	Number	Remarks
Dropsy	1	[illegible] 147 st. [illegible] a doctor of the [illegible]
Illness	1	[illegible] 87 × 7s.
Accident	1	[illegible]
Suicide	1	
[illegible]	1	[illegible]
Chest complaint	4	[illegible] One [illegible] 3 [illegible]
Heart	[illegible]	[illegible]
Liver	1	[illegible] 17
Influenza	1	[illegible] 79
[illegible]	[illegible]	[illegible]
Pneumonia	1	[illegible] 7
Mental disorder	1	[illegible] 35
Total	32	

During the period 1942–44 [illegible] deaths occurred:

(1) An [illegible] aged 40 [illegible]

(2) A [illegible] aged 70 [illegible]

(3) An infant [illegible]

(4) A man aged 68 [illegible]

[illegible]

An epidemic of [illegible] in 1906–07. This was [illegible] by Mrs. K. M. Brown [illegible] with [illegible]

[illegible]

[illegible] the [illegible] 55

[illegible] Diseases [illegible] elsewhere [illegible] other conditions [illegible] III

TABLE III

Disease	*No. of cases*	*Disease*	*No. of cases*
Malaria	97	[illegible]	[illegible]
[illegible]	3	[illegible]	[illegible]
[illegible]	7	[illegible]	[illegible]
[illegible]	8	[illegible]	[illegible]
[illegible]	11	[illegible]	[illegible]
[illegible]	2	[illegible]	[illegible]
[illegible]	5	[illegible]	[illegible]
[illegible]	2	[illegible]	[illegible]
[illegible]	2	[illegible]	[illegible]
[illegible]	18	[illegible]	[illegible]

[illegible]

[illegible] 97 [illegible] of 2[illegible] [illegible] St Helena [illegible] Phil[illegible] the[illegible] to [illegible] [illegible]

[illegible]

[illegible]

[illegible]

Pulmonary [illegible] of the severity of common colds, pulmonary complications were [illegible] children a number were found with well spread tubercle lesions during [illegible] pneumonia was only seen in three cases. Diffuse pleurisy was found [illegible] associated with asthma, only three in some 900 cases of common cold. [illegible] infections was noted by the Norwegian scientific expedition [illegible] the absence of *pneumococci* and *streptococci* for which they [illegible].

Rheumatic [illegible] There was no rheumatism in the mind of arthritis but fibrositis [illegible]. One case of sciatica was seen, and three of the elderly [illegible] the knees and shoulders. Squalor dirt and damp in small [illegible] and small size in the absence of any other factor.

Herpes Zoster [illegible] cases of herpes zoster over a period of eight months, but [illegible] investigation of herpes zoster in Parmella. No chicken pox [illegible] It was suggested that zoster may be produced as the result [illegible] the virus of varicella. The intervals between the three [illegible] the incubation period. It seems probable that the [illegible] the Norwegian [illegible] the virus of a neurotropic virus of low virulence.

Varicose Veins and Phlebitis [illegible] There is extensive varicose ulceration of both legs and varicosis among the older people. Of the [illegible] died on this island, which had also had a cerebral thrombosis and had lived at the [illegible]. He had marked hypertension and died following a cerebral vascular catastrophe at the age of 70. The other case was just seen with mitral valvular disease, auricular fibrillation and a senile or arteriosclerotic [illegible]. At that stage in his illness there was no hypertension. He too died.

The only other patient in whom a raised blood pressure was found was a multipara aged 28 suffering from mild hyperemia of pregnancy. This woman, who had gross oral sepsis, had for several months following the arrival of Service personnel lived on a diet which by local standards was very high in protein.

Night Blindness.—The only case of night blindness in child of 4 was cured following the exhibition of cod morsels. Some months after this, the patient the condition recurred and was again cured. The father was given a packet of cod liver oil and exhorted to feed the livers of fish to the child when cod liver oil again became unobtainable.

There is a history of another case of this condition in a child reported by Collingwood in 1895, Barrow in 1910 and Colson in 1936. This man now middle-aged is quite blind with bilateral cataracts. It is possible that the seeds of his cataract were laid during intra uterine life as the result of vitamin deficiency in his mother and pending the development of his predestined affliction, his own vitamin A deficiency caused night blindness.

These two cases are related, the grandfather of the man being the great grandfather of the child, i.e. the man's father is the child's great uncle.

Hysteria.—When the Norwegian expedition visited Fuglan they found that the majority of the girls and some of the youths were subject to mass hysteria. This consisted of convulsive fits so violent that several men were required to restrain a girl. The sight of a girl having a fit was sufficient to precipitate fits in others. Unfortunately this epidemic had subsided in 1942 but isolated hysterical fits occurred in seven persons, one of whom was a young male. These fits are very primitive and consist of violent movement, the hair gnashing of the teeth and rolling of the eyes. Never having seen anything like this, an accurate description of one these people have no pattern on which to model their behaviour and their fits bear no resemblance to idiopathic epilepsy. Fits are precipitated by emotion, usually anger, self pity, or by the desire to attract attention of a male. The motive was usually blatantly obvious. A typical example is that of a girl who was threatened by a telegraphist who took her night's washing, to her mother's house. On his arrival she would have an attack, and fit until fallen fit for three to four hours or as long as he remained to assist the family in restraining her. There is a history of two girls competing for the affection of one man who entered into a serious competition each attempting to throw more spectacular fits than her rival in the hope that the gentleman of their choice would come to assist in their control.

Midwifery and Paediatrics.—Labour is usually easy. There is only one childless [illegible] but this is not the result of primary sterility since the woman once suffered an abortion [illegible] which she has been barren. Confinements are superintended by several [illegible]. They take little active part in the proceedings apart from massaging the back [illegible] and the lubrication of the vagina with penguin or petrel fat which may be [illegible]. Attempts were made to dissuade them from this practice but since the immediate [illegible] mortality throughout the history of the island is nil the women could see little [illegible] alteration in their technique. From conversation with the older islanders the impression was formed that in the past infant mortality had been rather high but no figures prior to 1892 are available.

An antenatal clinic was started and this became very popular. A few minor abnormalities were seen and corrected. One case of placenta praevia was successfully delivered prematurely but the child, which suffered from [illegible], died after six days.

There are three women who are subject to habitual abortions and two abortions were seen. The women volunteered the information that they had not done anything to [illegible] thereby suggesting that there is knowledge of criminal abortion but it was impossible to obtain corroboration or information with regard to technique.

Infant feeding is entirely by the breast. The child is fed whenever it cries and at about four months [illegible] its diet is supplemented by potato or any other available carbohydrate. Weaning is frequently not completed until well after the first birthday. The result of this [illegible] is that the majority of infants are [illegible] scurvy, anaemia and dyspepsia. When a mother could be persuaded to treat her infant rationally the improvement [illegible] was spectacular.

[illegible]—The excellent dental condition of the islanders has been frequently reported [illegible] it was found that a deterioration is [illegible], particularly among the younger people. [illegible] and most of these were [illegible] stumps [illegible] multiple caries [illegible] and the whole population suffers from gingivitis and halitosis.

[illegible] women and children [illegible] had been [illegible]. This consisted of a little sugar tied up in a piece of cloth. There is remarkably little use of the tooth brush and the people do not like hard foods.

[illegible] member of the Norwegian expedition in 1938 [illegible] count of [illegible]. [illegible] was apparently found readily in the saliva of islanders living [illegible] but disappeared rapidly on their return [illegible].

[illegible] Extensive [illegible]

[illegible] affected [illegible] ● [illegible] affected [illegible]

[illegible] A number of the islanders suffer [illegible] of [illegible] partial [illegible] of the auditory [illegible] the [illegible] Records but there is no [illegible] The first [illegible] birth to 6 female children [illegible] descendants 9 of whom [illegible] The [illegible] shown in Table IV [illegible]

(b) [illegible] phalanx of the right hand [illegible] about 12 [illegible] the right [illegible] the right arm [illegible] bone [illegible] with the [illegible] a rudimentary [illegible] of which [illegible] to perform [illegible] and [illegible] with two [illegible] Skin [illegible]

Two [illegible] and the other [illegible] 7 The relationship between the [illegible] Thomas [illegible]

[illegible] Howard

[illegible] Bless)

[illegible] the [illegible] standers [illegible] full [illegible] the [illegible] and the Irish [illegible] [illegible] [illegible] available.

[illegible] the subject [illegible] H.M.S. [illegible] 18[illegible] [illegible] 1922

[illegible] [illegible]

[illegible] the right [illegible]

[illegible] [illegible] concerned [illegible] population [illegible]

[illegible]


L
R

[illegible]

[illegible]

[illegible] lation of these persons, but they are [illegible] assessment of them is in some cases [illegible] be regarded as high grade defectives.

[illegible] These are intractable individuals who [illegible] Some are unable to learn the [illegible] After some months of school attendance [illegible] had mastered long division and [illegible] the [illegible]

[illegible]

[illegible] itself.

[illegible] The concrete localization [illegible] the [illegible] that [illegible] the genealogist and statistician [illegible] its likely.

Psychosis [illegible] 143 [illegible] apparently [illegible] until [illegible]

The most [illegible] the American [illegible] during which [illegible] A. R. [illegible] Board [illegible] 1885 [illegible] report to the Board [illegible] 45 years [illegible] giving them [illegible] shoulders with [illegible] his report [illegible] of it [illegible] the patient [illegible]

[illegible] Thus [illegible] that they [illegible] the length [illegible] this [illegible]

[illegible] of 85 [illegible] Skipper [illegible] a practice [illegible] He has [illegible] two or [illegible] the woman [illegible] to abv [illegible] is to [illegible] the psychiatric [illegible]

REFERENCES

[illegible] 1945 [illegible]

[illegible] 1945 38 456

LESSONS OF WAR PSYCHIATRY

By Surgeon Commander E. W. Anderson, R.N.V.R.

[illegible] naturally suggests a [illegible] called for in the case [illegible] has taken place. In fact much of the [illegible] 1914 [illegible] certainly some of the lessons [illegible] is spread over a large part [illegible] the last century, and is not only [illegible] little [illegible] the [illegible] of war psychiatry [illegible] for example [illegible] English war [illegible] by [illegible]

[illegible] this the influence of the external [illegible] swing toward [illegible] and constitutional factors has [illegible] make us [illegible] for in the production of any illness [illegible] of the [illegible] in most of us since this war began and [illegible] formation of second [illegible] citizens [illegible] seem [illegible] military constitutional factors. It is not [illegible] that the [illegible] Glasgow. With regard to the [illegible] I might [illegible] by Dr. Tom Carlyle for the sums of what [illegible] pub[illegible] [illegible] in this aspect of the problem later.

[illegible] of these men do in fact suffer [illegible] less [illegible] Their response to them however [illegible] [illegible] *hallus* [illegible] utilize these symptoms for [illegible] warnings or possibly even losses of [illegible] [illegible] they are quite consciously produced as a [illegible] I do not know half the time what I am aiming of [illegible] I [illegible] of this matter has been as I pointed out in a paper [illegible] so-called amnesic syndrome.

[illegible] quite literally—he can't take it. Those with no [illegible] strong and whose character and upbringing make [illegible] stoic—and I believe that many of them [illegible] [illegible] seldom to shine and they depart [illegible]

[illegible] That [illegible] may be briefly considered [illegible] the seven. In one I think many of these [illegible] that England's war is none [illegible] I am not ashamed to refer to [illegible] that the extreme Welsh Nationalists would [illegible] Wales has much clear war. To analyse [illegible] short paper. Historical con[illegible] [illegible] nineteenth century and the expulsion [illegible] has shown many lines that may be in these [illegible] [illegible] character or colour to a [illegible] the hunt [illegible] of London [illegible] [illegible] that these monographs [illegible] seriously open to doubt [illegible] the factors of intelligence are [illegible] experience as these briefly mentioned [illegible] Naval Detention [illegible] Authoritative super[illegible] [illegible] upon general [illegible] highly [illegible] All the material exists for a [illegible] Vol. [illegible] tabulation [illegible] The most [illegible] [illegible] the [illegible] and many well [illegible] [illegible] from the start and [illegible] of [illegible] [illegible] the [illegible] and [illegible] not [illegible]

The [illegible] many of [illegible] [illegible] supply [illegible] The [illegible] with western [illegible] stands on the [illegible] for all [illegible] of [illegible] to

[illegible] the new and small [illegible] at the private [illegible] and open spa[illegible] [illegible] organized physical exercises [illegible] Royal Naval Hospital Cholmondeley [illegible] Navy, but it is hoped also [illegible] well being and the [illegible] points a way to the [illegible] under civilian con[illegible] perhaps to be seen [illegible] themselves with the [illegible] Neuropsychiatrist can [illegible] many of lunes b[illegible] R.N. [illegible] prove path[illegible]

[illegible] problem. Keeping [illegible] the future will be [illegible] with influence. The [illegible] large [illegible] must be made [illegible] of the name [illegible] psychiatrist [illegible]

[illegible] Mil. [illegible] 1945 2 145
[illegible] 1940 [illegible] 2 481 [illegible] 1942 2 801
[illegible] Kelly L. [illegible]

ADMINISTRATIVE EXPERIMENTS AT THE ROYAL NAVAL HOSPITAL HASLAR IN CONNECTION WITH THE RECEPTION OF CASUALTIES (MARCH 1942 TO OCTOBER 1944)

By Surgeon Captain F. C. Hunot, R.N. (Retd.)

[illegible] (1) the modifications in the normal routine [illegible] Naval Hospital [illegible] and (2) the building up of the Casualty Reception Department which [illegible] reception of casualties from the Normandy [illegible] permit the Hospital [illegible] Port hospital for the Isosport side of [illegible]

[illegible] with the view to placing on record a further chapter [illegible] Hospital [illegible] as it were to the sanity record which [illegible] manuscript [illegible] Captain Charles Craven, Governor of the Hospital [illegible] only [illegible] the [illegible] treatment of Army casualties at the Royal Hospital Haslar during the Battle of Waterloo. This happy phrase [illegible] used in these days, for so we were informed by the [illegible] Secretary to the Admiralty when he visited the Hospital [illegible] from the receipt by Their Lordships of a letter of thanks from the Army [illegible] contents be communicated to all concerned.

[illegible] specially desirable in view of statements by some senior officers which [illegible] on several occasions to the effect that Haslar had nothing to do with the [illegible] from the Normandy landing.

In an article by the [illegible] Bulletin of War Medicine there is a statement that in the medical [illegible] of Normandy the *Hôpital Sanitaire* (my italics) of the [illegible] large South Coast [illegible] casualties were specially [illegible] Port Hospitals.

An implication [illegible] Foreign Service [illegible] Medical Officer of the United States Navy [illegible]

[illegible]

[illegible]

[illegible]

A [illegible] to be modified to the [illegible] hospital [illegible] and [illegible] practice [illegible] of patients [illegible] in the first [illegible] [illegible] work [illegible]

[illegible] the [illegible] [illegible] moved.

Consequent upon [illegible] the Portsmouth Command [illegible] H.M.S. Hospitals at [illegible] turns a week. In addition [illegible] reception of large numbers of [illegible]

It was therefore [illegible] that [illegible] patient [illegible] and daily thereafter by the medical officer of his ward. [illegible] a daily state [illegible] showing the number [illegible] night and whether as walking cases [illegible] the number [illegible] to other hospitals and in an emergency [illegible] for discharge to Barracks on light duties [illegible] the hospital [illegible] number who were unfit to [illegible]

Subject to the modifications already [illegible] in emergencies medical wards and ward [illegible] surgical use at twenty four hours notice.

For these 301 surgical beds there was an [illegible] 1943 [illegible] the need for frequent evacuation to other hospitals [illegible] amount of paper work are evident. In addition the number of [illegible] 8,000 but neuro psychiatric and venereal cases were treated at Knowle [illegible] The usual total number of in patients in the Hospital in the years [illegible] all types of medical cases, surgical and venereal cases was between [illegible]

In the circumstances therefore the instructions were that it was chiefly [illegible] which amounted to considerable numbers which were to be treated at Haslar [illegible] routine surgical cases were to be evacuated. A proviso was retained however that [illegible] routine surgery was to be done to keep the staff of medical officers, sisters and [illegible] ratings at all times fully practised. This was very necessary as, owing to [illegible] very frequent changes of staff were occurring and of the V.A.D.s and sick berth staff [illegible] a large proportion at any time were without much experience.

Heavy air raiding had occurred frequently in 1940 and 1941, prior to the period of this record, but apart from complete destruction of one part of the Hospital, which luckily consisted only of the Museum and Library and thus caused no loss of life, and damage to some of the residences, the actual Hospital received only comparatively minor damage. The surgical officers' block and its theatre were put out of action. Accommodation for surgical officer patients had been constructed in the main surgical building.

In 1942 and 1943 enemy aircraft were over England on most nights, though bombs in close proximity to the Hospital were not very frequent. The policy with regard to evacuation of patients to the cellars at night was modified according to the frequency and severity of the raids and from late 1943 onwards lying cases fit to be moved were taken to the cellars each night and returned to the wards in the morning. Walking cases slept in their wards and were trained to proceed quickly to the cellars immediately on receipt of the "double red" warning.

(2) The Building up of the Casualty Reception Organization

A very efficient casualty reception organization, fully tested by many experiences under "blitz" conditions, was already in force at the commencement of the period under review, and it is desired to pay a full tribute to those responsible for its creation, namely Surgeon Captain W. H. Murray, R.N., and Surgeon Commander F. R. P. Williams, R.N. The

organization was the firm foundation upon which were based [illegible] rendered necessary by the passage of time and altered circumstances.

Two large casualty reception stations were fitted out [illegible] They are located one on each side of the Hospital on the ground floor and [illegible] the arches of a colonnade and each in close proximity [illegible] theatre. They were steam heated and maintained at [illegible] were kept fully equipped and were in the charge of [illegible] number of special wheeled trolleys on which stretchers [illegible] shelves. There were also trestles for taking stretchers [illegible] stretchers could be placed temporarily on the floor. [illegible] to hold at least forty stretcher cases besides a similar [illegible] Sanitary annexes, pantries for the provision of hot drinks [illegible] prevailed. Each contained secondary lighting [illegible] failure of the main supply.

One station was at all times ready with a small skeleton [illegible] signal bung given by the loud speaker system the reception [illegible] few minutes with its staff of medical officers. Sister [illegible] to hand at least forty stretchers cases besides a similar number [illegible] Sanitary annexes, pantries for the provision of hot drinks [illegible] prevailed. Each contained secondary lighting [illegible] failure of the main supply.

Ever since the fall of France in 1940 the Battle of the [illegible] in almost unrecognized by the general public. It was fought [illegible] of coastal convoys, consisting of the various types of coastal craft [illegible] assistance. There were frequent clashes at night [illegible] our light forces were engaged [illegible] These engagements often proved [illegible] as many as eighty or [illegible] the Channel Islands, the Isle of Wight and Portland.

The result of this long drawn out battle helped to [illegible] enabled supplies to reach the army forces in the [illegible] landing in Normandy in 1944 have been impossible.

Further practices also took place the object [illegible] unless actual casualties had been received.

In August 1942 the [illegible] dealing with a large [illegible] with 288 casualties. At this time [illegible] with a [illegible] carbon duplicate. The writer in the main [illegible] station were drawn from the [illegible] training. Unfortunately the small size and the success of the [illegible] with the lack of scholarship [illegible] the problem [illegible] with surgical terminology [illegible] which [illegible] for subsequent reference.

Subsequently in August 1942 [illegible] An improved form of notes taking was suggested [illegible] R.N. In its final [illegible] Medical Officer [illegible] which were specially printed [illegible] the principle that what was [illegible] injury treatment [illegible] The medical officer [illegible] Medical officers [illegible] stretchers [illegible] which were [illegible] with the [illegible] of the body in which [illegible] the front [illegible] of the Bed Ticket [illegible] each [illegible] in sequence and mark [illegible] difficulty of [illegible] patients particularly [illegible] and things [illegible] normal duties which the Hospital [illegible] with satisfactory results.

On admission at the [illegible] reception [illegible] and this was [illegible] This

[illegible] appropriate [illegible] N[illegible] [illegible] the surgeon [illegible] Rice [illegible] Dr. [illegible] [illegible] nanity [illegible] N[illegible]

Meanwhile [illegible] sister [illegible] the patient thoroughly [illegible] much [illegible] sary particulars of the [illegible] including the [illegible] Dr.

Serious or Slight — The [illegible] disposal of the patient [illegible] and routine injections [illegible] surgeons who volunteered [illegible] reception station in [illegible]

From the Bed Ticket [illegible] carbon copies containing all the [illegible] the Bed Ticket [illegible] patient had been [illegible] notification officer [illegible] appropriate to the [illegible] notified the next of kin by telegram [illegible] Dangerous or [illegible] quent progress reports [illegible] the surgical division.

The reception station [illegible] of the surgeon [illegible] in addition to myself the surgical specialist was always present and [illegible] points as to the disposal of patients.

In the reception station the complete state of the surgical beds was kept [illegible] which could be lowered in dark rooms from time to time and hung up and which [illegible] what resembled the bed of stretchers and pockets at a rare course.

On seeing that a patient's Bed Ticket had been completed and having [illegible] calling that the patient had been entered on the casualty [illegible] signal which simply consisted of raising his arm high was made to the [illegible] of the stretcher party waiting at the exit. Two stretchers [illegible] remove a stretcher case or one to escort a walking case.

The patients were checked out of the exit end of the reception station by [illegible] recorded the disposal either direct to operating theatre resuscitation [illegible] ment or ward. In any case the ultimate ward was indicated.

After this method of admission and checking up of patients was adopted [illegible] the correct numbers of casualties admitted at our finger tips. (It was [illegible] of authorities who would make sudden demands to know the exact number [illegible] Previously we had often been wrong in our numbers and had to [illegible] in the wards theatres and elsewhere.

The object aimed at in the reception station was to create an atmosphere [illegible] efficiency without appearance of haste or panic however great the number [illegible] cannot be stressed too much the great effect such an atmosphere has on the [illegible] especially when the efficiency is accompanied by sympathy and [illegible] of the female nursing staff.

Casualties have nearly always been through some shattering experience [illegible] how brave and unconcerned they appear to be. They are apprehensive and [illegible] surroundings. The manner of their reception does much to impress them [illegible] favourably and to give them confidence or otherwise in their treatment. On [illegible] occasions I was told by apparently hard boiled casualties how much they [illegible] the manner of their reception and how unexpected it had been.

I venture to make the claim that the casualty reception station was [illegible] though much training every person knew his or her job and carried it out quickly and quietly.

Though the procedure described may sound a lengthy one it was [illegible] and from the point of view of records mistakes were almost impossible. Although no effort was ever made to beat the clock and nobody knew that they were being timed on one occasion during the Normandy period when the organization was functioning truly 86 casualties were admitted in one hour and ten minutes.

Another innovation was the constitution of an organized resuscitation unit. Previously the bleeding of donors and the giving of transfusions had been carried out by members of the surgical staff under the direction of the surgical specialist. Donors from neighbouring establishments were filed every week and on special occasions forms, emergencies. [illegible]

[illegible]

[illegible]

[illegible]

[illegible] Port Hospital [illegible] ADMS [illegible] Port Hospital [illegible] ADMS [illegible] Port Hospital [illegible] ADMS [illegible]

[illegible] Supply [illegible] they had [illegible]

[illegible] ADMS [illegible] number of patients [illegible] Port Hospital [illegible] the number of [illegible] which brought [illegible] way so that [illegible] This did [illegible] ADMS [illegible] patients [illegible]

The other Port Hospital [illegible] Medical Hospital [illegible] function of [illegible]

It was [illegible] with the regular [illegible] centres which would [illegible]

All casualties should [illegible] Field Medical [illegible] properly completed [illegible] this was the only document required [illegible]

It was decided [illegible] Medical units so that [illegible] left.

Bir fad [illegible] arrangement [illegible] were asked to provide [illegible] expedition had been [illegible] reasons. The hospital [illegible] from other units [illegible] staff in contact with the [illegible] handed over by the expedition [illegible] agreed to reserve 400 [illegible]

We were informed that [illegible] the expedition started.

In order to have 500 [illegible] wards which were [illegible] wards but this could [illegible] problem was therefore [illegible] The necessary instruments [illegible] Owing to the large numbers [illegible] had to be instructed to [illegible] wards. It was also somewhat [illegible] hospitals with [illegible]

We were [illegible] to be informed [illegible] the date of D-day in advance but a week or so before [illegible] estimated that [illegible] would occur all possible patients were evacuated by [illegible] Hospital train to the Netley [illegible] and thereafter only emergencies were admitted. Arrangements were made [illegible] establishments to look after their own sick as far as possible and [illegible] the disposal of their [illegible] cases elsewhere.

All the foregoing [illegible] were arranged under "top secret" conditions.

During this period [illegible] were very obvious, such as the concreting of [illegible] the middle and [illegible] were likely to be used by tanks for turning. The building of huge [illegible] hangars at Stokes Bay now known to be part of the artificial harbours, and the [illegible] parking, and camouflaging of hundreds of tanks and other vehicles. The air was filled by day and night with the [illegible] sound of an ever increasing number of Allied aircraft.

Hundreds outside the Hospital and in Southampton contained shipping of all sorts [illegible] discharge after [illegible] tanks in many miles and the [illegible] roads in the back of the Hospital was almost continuous.

With the commencement of [illegible] heavy bombing of the vessels, port installations and [illegible] and in consequence of this severe damage to the Hospital [illegible] and in [illegible] neighbouring training establishments and the Royal Naval [illegible] Hospital Kinmel Park, an inspection and arrangements made for them to be [illegible] medical stores so that one of them could be used if the [illegible]

[illegible] and things appeared to be getting warm when it [illegible] The [illegible] in Portsmouth as if the enemy were [illegible] [illegible]

[illegible] of the casualties to be expected. One Army surgical [illegible] Part. Hospital cases as likely to be 10 per cent of [illegible] estimated them at only 5 per cent.

[illegible] somewhat scanty information available at the times [illegible] landing place and until the 240 casualties [illegible] carry [illegible] that the building [illegible] was usable at all states of the tide. I pictured the arrival [illegible] 30 to 60 every [illegible] stretcher every two hours. This would be a task with which [illegible] but on the other hand it would seem [illegible] 500 beds. It was [illegible] that these numbers [illegible] reached.

The task presented by this building in France was not the same as in previous casualty [illegible] which had always been the result of single incidents providing one definite batch [illegible] and [illegible] until the work was completed, often for several [illegible]

The present problem was likely to be a protracted affair, though we were told that the [illegible] was after which the number of Port Hospital cases arriving by [illegible]

[illegible] in order to prevent loss of efficiency and a complete breakdown [illegible] system of watches. Details of the number of medical [illegible] were fully [illegible] and 38 were picked up with 35 as the bare [illegible] Operating theatre was considered to be 24 with a varying number of [illegible] training or awaiting disposal.

Medical staff was [illegible] changing, though some of the key men remained for an [illegible] years. The nursing staff of Sisters, a few of whom remained in key [illegible] was fairly constant, and the majority [illegible]

With regard to [illegible] medical officers specialist it was decided that only one casualty [illegible] and [illegible] should be with him at the of twelve hours each.

[illegible] consisting of surgeon or anæsthetist and [illegible] VAD. This would be in attendance to take down the surgeon's notes in [illegible] Surgeon Rear Admiral C. P. G. Wakeley (Consulting [illegible] Surgeon Captain J. G. Sudrey, R.N.V.R. (Consulting Genito Urinary Surgeon [illegible] in the hospital as long as necessary.

We [illegible] that it would be much more adequate if [illegible] supervision, [illegible] notes and dressings as to which each patient

[illegible]

[illegible]

[illegible]

[illegible] Medical [illegible] officers [illegible] looked upon with [illegible] brief [illegible] organ [illegible] [illegible]

[illegible] Royal Naval Hospital Barrow [illegible] other officers [illegible] their names [illegible] the lists by the [illegible]

[illegible] arrangement [illegible] flooded out with [illegible] patients all of which [illegible] the Danger [illegible] serious Lists. [illegible] the [illegible] not be [illegible] that a Government pronouncement by [illegible] for a long time been a restricted [illegible] suggestions were rejected [illegible] urgent announcements after the last [illegible] that the rather [illegible] of paramount importance in the transport [illegible] that [illegible] relatives in Hospital [illegible] than usual. It is not thought [illegible] deterred anyone from coming [illegible]

It was [illegible] that no [illegible] to them and it was also pointed out that [illegible] their relatives had arrived.

Arrangements [illegible] the Relatives and the Wounded. Volunteers [illegible] transport [illegible]

At the [illegible] Medical officers [illegible] Volunteer [illegible] the Specialists described a [illegible] Medical [illegible] the latter [illegible] stated that the specialist [illegible] This was [illegible] until [illegible] lost the [illegible] of the night [illegible] the [illegible] Specialists [illegible] Medical [illegible] was

[illegible]

At the [illegible] Hasbrouck [illegible] to scrub [illegible] finally [illegible] of the [illegible]

H[illegible] [illegible] The [illegible] weather [illegible] expedition [illegible] officially [illegible] of the [illegible] transferred [illegible]

On the first [illegible] kept many of [illegible] the next morning, [illegible] of the Port Hospital [illegible]

Later in the day [illegible] Our organization [illegible] steady intervals for 72 hours. [illegible] there were insufficient stretchers [illegible] patients arriving at the theatres [illegible]

To overcome this the Line Patrol [illegible] ratings who were off duty. We were [illegible] after the Line Party always assisted [illegible] sympathy for the patients. If they were [illegible] station during the later stages of the [illegible]

Probationers were used as stretcher [illegible] throughout the Portsmouth Command [illegible] what restricted their employment later [illegible]

Luckily there were available at that time [illegible] Ophthalmic Dispensers awaiting draft [illegible] responsible positions in the reception [illegible] regretted that except in the early [illegible] shorter intervals of intense activity [illegible]

Almost automatic precision was [illegible] and its patients carried into the Receiving [illegible] by another ambulance, by which time [illegible] the station just in time to unload [illegible] ambulances. This procedure became [illegible] something akin to a [illegible]

We were able to deal with the much [illegible] large accumulation of patients awaiting [illegible] still was operated throughout the first [illegible]

After the first seventy two hours [illegible] forced and all arrears were [illegible] days and nights as they came [illegible] most of the way at this special [illegible] two hospital carriers received [illegible]

It soon became possible to [illegible] system of watches and to [illegible] three. This allowed of [illegible] no have until the Port was [illegible] officers who lived in the Hospital [illegible] [illegible]

[illegible] original landing, the first V1 bomb [illegible] forced us to modify our arrangements [illegible] the floor they were on but it is [illegible] by numbers. The bomb [illegible] the Hospital. They were [illegible] After this they [illegible] the Chief [illegible]

[illegible] by the body bleeding [illegible]

[illegible] and talking to the patient [illegible]

[illegible]

[illegible] the Port Hospital [illegible]

[illegible]

[illegible]

[illegible] Medical [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

complete [illegible] partial [illegible] and met with general [illegible]. The same that [illegible] more satisfactory [illegible] death that I can [illegible] case which [illegible] transferred [illegible] and [illegible] that [illegible] impossible.

We received a large number of chest and thoraco-abdominal [illegible] head injuries [illegible]. Many of these were [illegible] to Head units but [illegible] Army [illegible] announcement that head [illegible] did better [illegible] later [illegible] which was a Canadian one.

Special matters which [illegible] sulphonamide labels (red) and penicillin labels (yellow) [illegible] stated doses at stated intervals [illegible] the labels [illegible] and forwarded for record. [illegible] United States [illegible] dose of tetanus toxoid instead of [illegible] serum [illegible].

It was decided by Surgeon Captain Smith that all [illegible] of urine were to have [illegible] believed is to complete [illegible].

We received more than [illegible] proportion of [illegible] owing to [illegible] the Specialist Surgeon Commander W. J. Forbes Gould, R.N. He had [illegible] to make especially [illegible] with both eyes damaged.

We were lucky to have two dental surgeons, Surgeon Commander (D) W. [illegible] R.N., and Surgeon Lieutenant (D) D. S. Clegg, R.N.V.R., both of whom had [illegible] with fractured jaws, of which there were a number of cases.

Late in July and the beginning of August a curious malady [illegible] medical officers. It was a febrile attack with considerable prostration [illegible] highly infectious. Hence [illegible] it was almost entirely confined [illegible] so patients nor [illegible] members of the nursing staff caught it. [illegible] experts as influenza though the time of year seemed unusual.

The [illegible] of the Hospital in connection with the Normandy landing [illegible] end of August after a period of almost three months. That is considerably longer than the [illegible] days [illegible] suggested at the beginning. The total number of [illegible] that period was 1,347. Unfortunately [illegible] statistics of the mortality rate but [illegible] the first 108 patients [illegible] were numbered [illegible] whole period [illegible] much lower [illegible].

Throughout the three months' period both operating theatres [illegible] throughout the day and one was in use for most of the nights.

Our patients were truly international [illegible] all Services, consisting of British and [illegible] Americans, Norwegians, Fighting Frenchmen, Dutchmen and Poles. We [illegible] female French civilians, one of whom was most enthusiastic [illegible] unfavourably disposed towards the Allies, complaining that her farm had been [illegible] and her husband killed.

Of the many prisoners of war [illegible] hastened to inform us that they were not German but were Russians, Poles [illegible]. Some of the few Russians [illegible] poor mental and physical type and appeared to have been forced into German [illegible] battalions. [illegible] taken [illegible] the Germans [illegible]. The majority of the German prisoners were either [illegible] years of age. Some [illegible] only 16 or 17 years old.

CONCLUSION

The problem [illegible] was unlikely. One thing that [illegible] humanly possible [illegible] the many sources of friction and [illegible] criticism that can so easily arise.

It can be truly said that the [illegible] success [illegible] the treatment of patients and co-operation with the Army [illegible]. Very many pathetically grateful letters of thanks [illegible] patients [illegible] patients themselves.

[illegible]

[illegible] that [illegible] towards [illegible]

[illegible] Medical [illegible]

[illegible] *The Lancet* [illegible] Major-General Barrow [illegible] appended

[illegible]

[illegible]

[illegible] OF THE TREATMENT OF [illegible] TERTIAN MALARIA

[illegible]

[illegible] based on [illegible] 883 cases [illegible] tertian [illegible] were followed up and [illegible] study [illegible] the selection [illegible] stock

[illegible] West Africa [illegible] [illegible] forms [illegible]

[illegible] to ascertain which of these methods of [illegible] effects [illegible]

[illegible]

[illegible]

(a) [illegible] *der Injection* [illegible] 10-20 grains [illegible] methods [illegible]

(b) [illegible]

[illegible] stream.

[illegible]

(c) [illegible]

[illegible]

30 [illegible]
the [illegible]
[illegible]
[illegible]
[

[illegible] ph ations [illegible] After 25 patients had [illegible] pain [illegible] vomiting and [illegible] administration of [illegible] but [illegible] occurred [illegible] then [illegible] pain (Hughes and Bond in 1914 [illegible] fails to adhere to [illegible] this [illegible] such [illegible] very low [illegible] of the disease and [illegible] gamocyte [illegible] number [illegible] infected [illegible] days in the [illegible]

D. Ulcerative Colitis [illegible] recurring, but [illegible] average daily [illegible] 90 gr. [illegible] by Sutton the only tipping [illegible] its purpose, but it was hardly [illegible] in spasm it is discontinued as [illegible] Thick mucus [illegible]

Ipecac is given to all patients after [illegible] preparations and it seems [illegible] that ipecac is to bilhar an ally [illegible]

Sulph arsenic compounds, notably [illegible] sulphathazole and sulphaguanidine [illegible] and sulphaguanidine [illegible] and [illegible] and sulphaguanidine without effect.

DIETARY REGIMES. Patients [illegible] Fluids had to be pushed in [illegible] difficult to lay down any [illegible] for food which their temperature [illegible] temperature of 99° F. One of the [illegible] with plenty of fruit and [illegible] days [illegible]

Patients were confined strictly to their beds until the temperature had fallen to 100° F. Below that level patients remained in bed but were allowed to go to the heads until the temperature had been normal four days. Thereafter rapid return to normal was permitted during the remaining four days of the course. After discharge from hospital patients had four days excused duty and four days light duty before returning to full duty.

It must be borne in mind that not only all these patients were returning men, but the old, the very young, and the bad cardiac were not admitted to the hospital.

As a safeguard against the insidious onset of Hartland's fever, [illegible] examinations were performed daily in each case, with particular [illegible] calomum and calomel on standing. Mayer Tamet test is not performed as [illegible] and [illegible] in dealing with cases of vomiting.

INSTRUMENTS. Selection of the appropriate [illegible] is based on the following criteria. Mild and moderate [illegible] their treatment by months and severe [illegible]

(a) *Pyrexia.* Cases with an admission temperature [illegible] classified as mild or moderate and those [illegible] a alarming degree is not an uncommon in this [illegible]

(b) *Condition.* A man's general [illegible] to the severity of his illness. In some [illegible] disarmingly low complaints, though [illegible] these were mild or moderate in severity. [illegible] in severe cases notably those with [illegible] Edinburgh coma, convulsions, [illegible] All cases admitted with albuminuria [illegible]

(c) *Intensity of Infection.* All patients [illegible] and [illegible] humidity [illegible] stained in [illegible] [illegible] parasites [illegible] [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Rot [illegible]

[illegible]

[illegible]

DAY	1	2	3	4	5	6	7	8	9	10	11	12	
DIET	FLUID	FLUID	FLUID	HGH	LIGHT	FULL	FULL	FULL	FULL	FULL	FULL	FULL	
REGIMEN	STRICT BED	S B	S B	S B	BED	B	B	B	UP P M	UP	UP	UP	
CHART													
ROUTINE A													TOTAL DOSAGE
QUININE	GRS 30	30	30	30	30	30	–	–	–	–	–	–	180
MEPACRINE	GM 0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 3	3 6
FOT CIT	GRS 90	90	90	90	90	90	90	–	–	–	–		630
IRON	GRS –	–	–	–		–	–	90	90	90	90	90	450
ROUTINE B													
MEPACRINE	GM 1 2	0 9	0 6	0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 3	5 4
IRON	AS	IN	A										
ROUTINE C													
QUININE	GRS 30	30	30	30	30	30	–	–		–	–	–	180
MEPACRINE	GM 0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 6	0 6	0 6	0 6	4 8
EXERCISE	–	–	–	–	–	–	–	–	X	X	X	X	

Relapse Rate. Many cases in this series were undoubtedly due more to resurgence of a pre-existing latent infection than to reinoculation. There was always the risk of sending a man out of hospital apparently cured but still carrying viable parasites in his system. If this were the case, hundreds of men who have previously had subtertian malaria still resident in a hyperendemic area, and forty of these fall ill again with another attack. There is no means of ascertaining how many of these forty cases are due to relapse and how many to reinoculation. Nevertheless, acting on the assumption that the percentage of fresh infections was the same

[illegible]

[illegible]

[illegible]

[illegible] many factors [illegible] unemployment [illegible] suddenly [illegible]

[illegible] that this [illegible] Recruitment [illegible] so far possible [illegible] and commission [illegible] tion time [illegible] Navy [illegible] for [illegible]

This [illegible] their sup[illegible] where de[illegible] in Detention [illegible] effect [illegible]

The [illegible] assets in the Navy [illegible] efficiency [illegible] such cases [illegible] which might [illegible]

Psychiatry [illegible] the individual's [illegible] By emphasizing [illegible] social circumstances [illegible] or police [illegible] unmoralized [illegible] as unsuitable [illegible]

This [illegible] and unfair to [illegible] picking out the [illegible] prior to entry [illegible] the Service has [illegible] at the Recruitment [illegible] siderations [illegible] decidedly subjected to [illegible]

Findings [illegible] Quarters [illegible] 1941 [illegible] 1945 [illegible] and 115 [illegible] seventh)

(1) *Personal [illegible]* [illegible]

Visa [illegible]
Disobedience [illegible]
Drunkenness [illegible]
Petty larceny [illegible]
Other [illegible]

(2) *Age Group* [illegible]

[illegible]

The youth of [illegible]

(3) *Intelligence*

With this [illegible] does not show [illegible] 1941 the majority of [illegible] with the [illegible] Centres have [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

SUMMARY

Men [illegible] of unstable [illegible] are at [illegible] Reception Centre from entering the Navy where the [illegible] proportion to their numbers.

Such men [illegible] series of 400 [illegible] finders given a psychiatric review at [illegible] Navy consistently at 12 per cent of those serving their first [illegible]

Psychiatry [illegible] the task of distinguishing those who cannot make good and should be [illegible] but hope by bail conduct to gain release [illegible]

[illegible] permission to forward this paper [illegible] case records.

[illegible] KILINDINI

[illegible] WITH *OBT* [illegible]

The [illegible] the watchword now is [illegible] though for [illegible] The following notes may therefore be of interest to [illegible] who have resided in these parts or passed through [illegible]

As Mauritius [illegible] Madagascar and the Naval Air Stations in Tanganyika and [illegible] East Africa Command a great field is provided for [illegible] tists and for strenuous efforts towards their control [illegible] the Royal Naval Auxiliary Hospital (160 beds) [illegible] W.R.N.S. Quarters Duckyard Camp and the Duckyard Sung[illegible]

Malaria has [illegible] and it is most gratifying that the enormous amount of [illegible] malarial parties in Mauritius and Tanga have borne such [illegible] as mountainous terrain and jungle fever infested swamps [illegible] Until [illegible] the war it was impossible to avoid fever in the [illegible] of Mauritius [illegible] the Blue Lagoon but this is now all altered [illegible] fortunately [illegible] changed the Island of late

Gam[illegible] tsetse fly infest[illegible] itself a la[illegible]

Dieg[illegible] precar[illegible] is pleasa[illegible]

M[illegible] with [illegible] Kil[illegible] Wa[illegible] links with the [illegible] from the north to south [illegible] fine sailing.

[illegible] April to October there are no [illegible] heavy [illegible] In March the rainless monsoons are com[illegible] fall is 48 in. but in the rains there may be 4 to 6 in. [illegible] April [illegible] and arid condition of the drought is remarkable [illegible] with the moist of the rains. Where there may be [illegible] and shrubbery [illegible] long, non-thorny [illegible] and flowering trees and bushes [illegible] forest [illegible] the heads being of short [illegible] from the [illegible] bushes [illegible] bliss. [illegible] trail [illegible] prevent the [illegible]

[illegible] include the big mangos [illegible] banyan [illegible] [illegible] seems large [illegible] Bananas [illegible] Indian peaus are common. The [illegible] gaunt appearance [illegible] 7 [illegible] in the physiography [illegible] Mo[illegible] produced from [illegible] pink and purple bougainvilleas [illegible] including golden [illegible] and jasmine. The majority of the [illegible] plants which [illegible] [illegible] prairie [illegible]

[illegible] prepared for the [illegible] which crops [illegible] Re[illegible] variety and [illegible] [illegible]

[illegible] full well some [illegible] and killing, thus they [illegible]

[illegible] careful attention and the [illegible] establishments all [illegible] [illegible] quantity under rationing, but milk [illegible] [illegible] are high and [illegible]

[illegible] Shirazi Nyah Shah will [illegible] [illegible] houses in the [illegible] [illegible] [illegible]

[illegible] 85 [illegible] 89-98 per cent) the climate will [illegible]

[illegible] one [illegible] being [illegible] mild [illegible] coastal [illegible] soon [illegible] forms of [illegible] common [illegible] canton [illegible] poliomyel[illegible] [illegible] mouth [illegible]

[illegible] maint[illegible] [illegible] for the benefit of all [illegible]

[illegible] Medical Officer of Health [illegible] of the Naval Health [illegible] 124 per thousand and that [illegible] malarial [illegible] far this season [illegible] months ago [illegible] cases [illegible] Over 100 [illegible] malaria [illegible] the 1945 season [illegible] will be [illegible]

As no approach to malarial [illegible] W R N S and Nursing Staff wear long [illegible] skirts and [illegible] 1900 At [illegible] watches W R N S [illegible] Nursing staff [illegible] using repellant ointment and lotion All [illegible] than bands

All the buildings in Naval establishments [illegible] hospital have been [illegible] D D T The first [illegible] the Naval Hospital for a bed [illegible] cases of [illegible] of venereal and pulmonary [illegible] skin cases

Mombasa has been [illegible] resulting in increasing difficulties [illegible] the days [illegible] news A [illegible] Naval [illegible] bring back a case of leprosy [illegible] was made [illegible] commandeered [illegible]

The civilian Medical Officer of Health [illegible] population since the war [illegible] Indians [illegible] Africans apart from the [illegible] 102,000 [illegible] making two thirds During [illegible] living conditions in many parts [illegible] appalling [illegible] most inaccurate being [illegible] checks [illegible] estimates Many [illegible] in this respect Problems of sanitation [illegible] and anti-malarial precautions [illegible] Influx of [illegible] from [illegible] to the Port Health [illegible] Immigration Authorities [illegible] 90 [illegible] cases and there was a small rapidly controlled [illegible] smallpox last year Mombasa is still considered endemic [illegible] tuberculosis and diphtheria [illegible] at the Native Hospital from time to time one can see cases of almost [illegible] of tropical disease [illegible] leprosy [illegible] schistosomiasis beri beri [illegible]

Owing to lack of treatment [illegible] at present somewhat inadequate but new [illegible] are being implemented with success Post war schemes [illegible] and great improvements in all the health services [illegible] already prepared and await financial backing

With the [illegible] of the S.W. [illegible] and adjacent to the [illegible] mounting, to 21 square miles. The N. [illegible] *fan-shaped* [illegible] and *rodes* [illegible] naturally properly and in spraying [illegible] new treated with D.D.T. Air [illegible] [illegible] chemicals are still superseded.

Though [illegible] has a great future and [illegible] completely [illegible] up.

[illegible] Mombasa and East Africa where [illegible] to seek. There [illegible] all the medical staffs but [illegible] incidentes.

Clinical Notes and Cases

HELMINTHIC DIVERTICULUM: INCARCERATION IN AN INGUINAL HERNIA

[illegible] COMMANDER J. A. STEPHENSON, R.N.V.R.

[illegible] of the intestinal tract known as Meckel's diverticulum has [illegible] common albeit to the surgical press. A recent case in [illegible] principle in the condition of the rare complication in this [illegible] briefly certain aspects of the subject.

[illegible] various forms, and these may be grouped as follows: (1) [illegible] (2) [illegible] sinus, (3) [illegible] cyst, (4) [illegible] (5) [illegible] attaching bowel to umbilical structures, and (6) [illegible]

[illegible] usually quoted as from 1 to 2 per cent. but [illegible] from laparotomy findings and autopsies from necropsy [illegible] that the condition is more commonly found in the male [illegible] than proportionally than in the female. [illegible] Dangerously frequent in childhood [illegible] the other [illegible] Hodgkin (1941) has surveyed a group of 201 [illegible]

[illegible] The [illegible] and unexplained existence of hitherto gastric [illegible] in the adjacent abdomen in the doubtful diagnosis of [illegible] of malignancy or frank medical [illegible] this must be [illegible]

[illegible] This usually arises from inversion of a diverticulum and [illegible] of an ileo-caecal intussusception. Hodgkin (1941) [illegible] from the diverticulum [illegible] this type. (In [illegible] the [illegible] is [illegible] by lipomata [illegible] the ileo-caecal junction [illegible] a similar [illegible] further [illegible] intussusception. The appendix in this case [illegible] useful following up [illegible] implications.)

[illegible] (Jackson). This may result from torsion [illegible] the diverticulum or round ligament [illegible]

[illegible] acute [illegible] Meckel's diverticulum [illegible] the [illegible] in the [illegible] solid [illegible]

[illegible] Meckel's diverticulum of this [illegible] appendicitis.)

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

THE INTRODUCTION OF BOUNDARY HEMORRHAGE AT THE SITE OF COMMON LITHOPEDIAL EXCITATION IN THE GROIN

[illegible] MASTER H. B. MORRIS [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] SULPHADIAZINE THERAPY [illegible] BY DECAPSULATION OF KIDNEY AND PYELOGRAPHY

By [illegible] MELLICK, R.N.A.M.

[illegible] was admitted at 1000 h. on [illegible] 15, 1944 [illegible] Sierra Leone, West Africa, complaining of general pain in the lower part [illegible] since 1930 hours the general [illegible]. The fol

[illegible] treatment [illegible] Since [illegible] examination had [illegible] between [illegible] found [illegible] and [illegible] 1944 [illegible] 3 [illegible] 1944 [illegible] still [illegible] supported [illegible] from 1600 hours [illegible] and diuresis [illegible] 0900 hours

[illegible] this tongue [illegible] revealed [illegible] regards regular [illegible] the bladder [illegible] was then passed [illegible] passed and [illegible] specimen was [illegible] bladder and [illegible] only [illegible] was [illegible] after [illegible] and blanketed by [illegible]

[illegible] was made [illegible] later [illegible] and [illegible] and [illegible] [illegible] [illegible]

[illegible]

[illegible]

Reviews

[illegible]

[illegible]

MEDICAL [illegible]

(89 in [illegible]

[illegible] peaks and [illegible] has been [illegible] and 120 [illegible]

Among the [illegible] remarkable [illegible] Tube Shelter [illegible] appears [illegible] terms of [illegible]

In a [illegible] 89 collected [illegible] be beneficial [illegible] by pressure [illegible] the Medical

The text [illegible] and [illegible] section [illegible] the result of the [illegible] the Medical [illegible] The [illegible] Attitude [illegible] of the battle [illegible] to which [illegible]

The book [illegible] also at hand, the [illegible] the pocket [illegible]

Reviews [illegible]

WEATHER [illegible] By Mr Marshall

Still [illegible] Weather Lore [illegible]

He [illegible] of this book [illegible] typed in that [illegible] have [illegible] their [illegible]

The book [illegible] very humble [illegible] tion and [illegible] of might be [illegible] Instructive [illegible] hard [illegible]

The [illegible] environmental [illegible]

Paul [illegible] psychological [illegible] be paid to [illegible] *British Journal* [illegible]

This little book [illegible] label in an attractive [illegible] We cannot [illegible] sure research [illegible] to the [illegible] in America [illegible] in Great Britain [illegible] with a [illegible]

Anti-[illegible] dress in [illegible]

[illegible]

[illegible] p. 296 [illegible]

[illegible]

[illegible] 1945 [illegible]

[illegible]

[illegible]

[illegible]

JOURNAL OF THE ROYAL NAVAL SCIENTIFIC SERVICE

Vol. I. No. 1. September 1945

[illegible]

Vol. I. No. 2. November 1945

[illegible]

◆

News of the Service

OBITUARY

[illegible]

[illegible] R.N.V.R. [illegible] H.M.S. [illegible] April [illegible] 1945.

[illegible] Davis, R.N.V.R. [illegible] 1945. [illegible] R.N.V.R. [illegible] Skegness [illegible] H.M.S. [illegible]

[illegible] R.N. [illegible] 1941 [illegible]

[illegible]

[illegible] R.N.V.R. [illegible] 1941 [illegible] H.M.S. [illegible]

[illegible] R.N. [illegible]

[illegible]

[illegible]

BENCURS

[illegible]

[illegible] in Despatches

[illegible]

PROMOTIONS

[illegible]

[illegible] M. [illegible] to be Surgeon [illegible] [illegible] Sep [illegible]

[illegible] J. H. Hughes to be Surgeon Lieutenant [illegible] Sep [illegible]

[illegible] W. W. [illegible] to be Surgeon [illegible]

[illegible] to be Surgeon Lieutenant [illegible] 18 1945

APPOINTMENTS

[illegible] M.B., B.S. [illegible] Surgeon [illegible] Dublin [illegible] January 1 1946

RETIREMENTS &c

[illegible] placed on the retired list [illegible] 9 1945

[illegible] reverts to retired list [illegible]

[illegible] placed on the retired list [illegible]

[illegible] retired list November 27 1945

[illegible] November 3 1945

[illegible] December 9 1945

[illegible] December 2 1945

[illegible] October 16 1945

[illegible] December 27 1945

[illegible] October 19 1945

[illegible] December 3 1945

[illegible] 1945

[illegible] January 4 1946

[illegible]

[illegible] 1945

[illegible] 28 1945

[illegible] November 1 1945

[illegible] 1945

[illegible] 1945

[illegible]

[illegible] December [illegible] 1945

[illegible]

[illegible] November [illegible]

[illegible] 1945

[illegible] 1945

[illegible] 1946

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] 1945

[illegible] 1945

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] granted War Service [illegible]

TRANSFERS TO PERMANENT LIST

Surgeon Lieutenants [illegible] Commanders (D) (Emergency) [illegible] [illegible] J. B. [illegible] D. M. [illegible] Marshall and A. J. R[illegible]

ROYAL NAVAL VOLUNTEER RESERVE

PROMOTIONS

[illegible]

Lieutenant-Commanders C. S. Hunter, J. W. M[illegible]

R. W. [illegible] Lieutenants J. [illegible] Ashton, J. J. Smith, [illegible]

[illegible] Parish, C. J. Baker, R. J. K. Hunter, [illegible]

[illegible] H. R. Hall, M. C. Anderson, J. W. R[illegible]

[illegible] H. R. Leith and A. Hetherington to be [illegible]

[illegible] J. Freeman, J. J. [illegible], Rutter, Walk[illegible]

[illegible] Walter, A. H. B. Silver and H. [illegible]

[illegible] 1945

[illegible] Commander D. A. [illegible]

[illegible]

[illegible] Commander J. N. McIlwaine to be [illegible]

1945

[illegible] Commander R. C. [illegible] to be [illegible]

1945

[illegible] Lieutenant-Commander A. H. R. [illegible]

1945

[illegible] Lieutenant-Commander S. [illegible]

1945

[illegible] Lieutenant J. W. C. [illegible]

[illegible] Lieutenant R. W. Richardson [illegible]

[illegible] Lieutenant J. [illegible] Stuart to be [illegible]

1945

[illegible] Commander J. [illegible] Hudson to be [illegible]

[illegible]

[illegible] Lieutenant R. Hen[illegible]

1945

[illegible] Lieutenant M. Ru[illegible]

[illegible]

[illegible] Commander J. A. [illegible] to be [illegible]

1945

[illegible] Lieutenant J. M. [illegible] to be [illegible]

[illegible] 1945

[illegible] Lieutenant A. M. W. [illegible]

[illegible] 1945

[illegible] Lieutenant A. [illegible]

1945

[illegible] Lieutenant W. [illegible]

1945

[illegible] Lieutenant M. [illegible] to be [illegible]

1945

[illegible] Lieutenant A. [illegible]

1945

[illegible] Lieutenant-Commanders A. J. [illegible] to be [illegible]

1945

[illegible] A. J. H. Miller, A. H. W. [illegible]

[illegible] R. S. [illegible] H. Black, J. H. B. [illegible]

[illegible] Leakey, J. J. Robinson, J. H. [illegible]

[illegible] J. Macrae, [illegible] W. [illegible]

[illegible] Mel[illegible]

[illegible] Lindsay, J. H. [illegible]

[illegible] B. Hughes, [illegible]

[illegible] Lieutenant-Commander [illegible] September 1945

[illegible] R. C. Coghill, A. [illegible]

[illegible] September 1945

[illegible] Commanders, September 1945

[illegible] W. B. Mitchell, [illegible]

[illegible] A. [illegible] R. Finn, [illegible]

[illegible] to be Lieutenant-Commanders [illegible]

[illegible] A. H. [illegible]

[illegible] Mel[illegible] A. [illegible]

[illegible] A. H. [illegible]

[illegible] A. H. Lieutenant J. [illegible]

1945

RETIREMENTS &

[illegible]

CAPTAIN A. HURFORD MEMORIAL

[illegible]

Notice.

The Editors invite Medical Officers to send in Original Papers on professional subjects, travel, personal experiences, &c. Items of news and matters of interest to the Naval Medical Service will be welcomed from ships and establishments on home and foreign stations.

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All Communications should reach the Editors on or before the First of the Month preceding the date of issue. Unless clearly written, they should be typed in order to avoid mistakes, and they should be addressed to the Editors, JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE, Royal Naval Hospital, Barrow Gurney, near Bristol, and not to Royal Naval Hospital, Haslar, Gosport.

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The payment of subscriptions by Banker's Order is recommended as it relieves the Subscriber of the necessity of forwarding a cheque each year and simplifies the keeping of accounts.

Journal

of the

Royal Naval Medical Service.

Articles.

NERVE REGENERATION.—OBSERVATIONS ON MOTOR AND SENSORY RECOVERY IN A CASE OF INJURY TO THE RADIAL NERVE

BY SURGEON LIEUTENANT A. E. DE LA FIDLER MATTHEWS, R.N.V.R.

PART I[1]

INTRODUCTION.—Paralysis of the radial nerve following injury is commonly met with and the resulting clinical picture is well recognized. It is not so common for a member of the profession to have personal experience of such an injury. On December 11, 1942, my own right radial nerve was completely divided in the arm by a shell splinter and this paper is prepared from notes which were begun within a few days of receiving the injury.

Method of Presentation.—Clinical observations on which this paper is based were made over a period of two years and fifty seven days—from December 11, 1942 (the date on which the injury was sustained) to February 6, 1945. The paper is divided into two parts, each of which consists of a presentation of the clinical findings and is followed by a discussion. Part I (11.12.42 to 11.12.44) deals with the general aspects of the case although in the discussion which follows emphasis is laid on motor recovery. Part II (11.12.43 to 6.2.45) is devoted entirely to sensory phenomena.

The Radial Nerve—Motor and Sensory Distribution.—Nomenclature.—The radial nerve derives its fibres from the 5th, 6th, 7th and 8th cervical and 1st thoracic roots. After traversing the spiral groove of the humerus it comes to lie in front of the external epicondyle where it gives off the posterior interosseous nerve. It then descends along the front of the lateral side of the upper two thirds of the forearm behind the brachioradialis. Above the wrist the nerve passes deep to the tendon of the brachioradialis and divides into superficial and deep terminal branches. The superficial branch supplies an area of skin on the dorsum of the hand. The area of skin involved in this case is illustrated in fig. 1 and is referred to in the text as that supplied by the *radial nerve*.

The branches of the radial nerve are:—

(1) *Muscular.*—(*a*) Medial to the medial and long heads of triceps and to the anconeus. (*c*) Lateral to the brachioradialis, extensor carpi radialis longus, and the lateral part of brachialis.

(2) *Cutaneous.*—(*a*) Posterior cutaneous nerve of the arm. (*b*) Lower lateral cutaneous nerve of the arm. (*c*) Posterior cutaneous nerve of the forearm (fig. 1).

(3) Articular to the elbow joint.

[1] Being a Thesis approved for M.D. (Cantab). Part II will appear in the July 1946 issue.

[illegible] the branches of the nerve are [illegible] to the [illegible] ridials [illegible]

[illegible] Short branches

[illegible] medial | Long branches
[illegible] lateral |

[illegible] joints of the carpus

[illegible] which appears in the first [illegible] or two brackets [illegible] The number in a single bracket or, if two brackets are [illegible] the number of days from division of the nerve at the time [illegible] bracket, when present, refers to the number of days [illegible]

[illegible] HISTORY

[illegible] ember 11, 1942 [illegible] small jagged piece of metal from the [illegible] right arm. The injury was sustained [illegible] [illegible] numbness [illegible] of the metallic fragment being the middle of the arm [illegible]

[illegible] experienced in the dorsal aspect [illegible]

[illegible] was possible in the circumstances. [illegible] dressing was applied. At the early stage hyperæs- [illegible] [illegible] was fixed and [illegible] remained [illegible]

[illegible] Royal Naval Hospital [illegible] right upper arm [illegible] the long head [illegible] the humerus [illegible] radial nerve [illegible] The proximal [illegible] A small [illegible]

[illegible] and finally [illegible]

[illegible] the thumb and and [illegible] [illegible] hyperæsthesia [illegible] index and middle [illegible] anywhere in [illegible] hyperæs- [illegible] however [illegible]

▭ *Loss to pin prick and light touch*

▨ *Loss to light touch. Hypoaesthetic response to pin-prick*

[illegible] Extent of complete and partial sensory loss [illegible] following lesion of the radial nerve in the [illegible]

[illegible] At some points [illegible] of stimulation could be [illegible]

[illegible]

14.12.42 [illegible] days after the [illegible] began to flake [illegible] 1942 [illegible] of the left hand [illegible]

[illegible] December 17 1942 [illegible]

[illegible]

17.12.42 (6) [illegible]

[illegible]

3.1.43 (23) [illegible]

There was [illegible]

6.1.43 (26) [illegible]

8.1.43 (28) [illegible] touch and manipulat[illegible] extremes [illegible] normal. Pro[illegible]

11.1.43 (31) [illegible] massage [illegible]

12.1.43 (32) [illegible]

[illegible]

15.1.43 (35) [illegible] all muscles [illegible]

22 1 43 [illegible] muscle to latissimus. Sluggish [illegible]

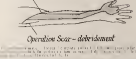
6 2 43 57 [illegible] an *ex[illegible] suture* of the [illegible] R.N. Auxiliary Hospital [illegible] while the lesion was exp[illegible] As the level [illegible] Above the [illegible] [illegible] growth and [illegible] [illegible] [illegible] a large bulb [illegible] [illegible] [illegible] minute. [illegible]

14 2 43 66 [illegible] 15 1943 [illegible] applied [illegible]

With the arm [illegible] of the [illegible]

1 4 43 (111) 54 [illegible]

[illegible] with the [illegible] was now [illegible]



[illegible] Note that the [illegible] (cf. fig. 1)

[illegible] gradually disappeared in the [illegible]

[illegible] were experienced [illegible]

[illegible] was [illegible]

[illegible] April [illegible]

[illegible] April 21 1943 [illegible] paralysed [illegible]

[illegible]

[illegible] 13 (135) (98) [illegible] May [illegible] 1944 the extensor [illegible]

7 6 43 (178) (121) [illegible] any muscle to faradism All [illegible] except [illegible] abductor [illegible] and extensor [illegible] longus [illegible]

17 6 43 (188) (131) [illegible] also [illegible]

25 6 43 (196) (139) [illegible] the same hand [illegible] for ten days [illegible] this period that [illegible] slight extension [illegible] possible [illegible] full range [illegible] were [illegible] flexed

29 6 43 (200) (143) By [illegible] 1943 [illegible] movement was accompanied [illegible]

1 7 43 (202) (145) The [illegible] become stiff [illegible] 1943 active and passive [illegible] extended actively [illegible] 126 [illegible] and the elbow [illegible] extension was [illegible]

On extending the elbow [illegible] appeared [illegible] the elbow also [illegible] hand became [illegible]

7 7 43 (208) (151) The [illegible]

14 7 43 (215) (158) [illegible] 1944 [illegible] terminal phalanx could [illegible] contact

19 7 43 (220) (163) [illegible]

24 7 43 (225) (168) The elbow [illegible]

31 7 43 (232) (175) By July [illegible] had reappeared [illegible] to extend the proximal phalanx [illegible] in the mid position [illegible] discrepancy became [illegible] improved

4 8 43 (236) (179) The elbow was extended [illegible] 164 degrees

10 8 43 (242) (185) The elbow was [illegible] 160 degrees [illegible] to 160 degrees

18 8 43 (250) (193) The elbow was [illegible] from 164 degrees [illegible] to 160 degrees

22 8 43 (254) (197) At this stage [illegible] bones which [illegible] on an aesthetic [illegible] anaesthetic [illegible] came up [illegible] ascending [illegible] muscles supinator [illegible] produced [illegible]

26 8 43 (258) (201) The elbow was extended actively to 168 degrees and passively to 174 degrees

27 8 43 (259) (202) [illegible] 39 8 cm [illegible]

4 9 43 (267) (210) Brachio radialis responds to faradism but [illegible] All [illegible] to galvanism

7 9 43 (270) (213) All muscles [illegible] to faradism except [illegible] extensor pollicis longus [illegible] All muscles respond to galvanism

27 9 43 (290) (233) [illegible] the thumb and [illegible] well marked [illegible] can be described [illegible] a vertical [illegible] and the thumb nail was [illegible]

27 10 43 (320) (263) By now [illegible] extensor tendons [illegible] clenched the wrist was slightly extended and [illegible] at the same time (fig. 3)

The [illegible] lateral aspect of the arm [illegible] produced a sensation [illegible] knocking [illegible] pins and needles [illegible] by section of the posterior [illegible] nerve [illegible] complete anaesthesia [illegible] power [illegible] wrist could now be actively extended [illegible] 170 degrees [illegible]

[illegible]

30 10 43 [illegible] nts

[illegible] h the passage [illegible]

11 10 43 (324) (267) [illegible]

11 1 43 (365) (308) [illegible]

[illegible] the onwards [illegible]

[illegible]

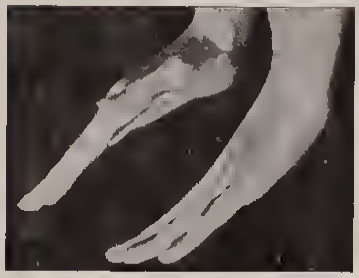
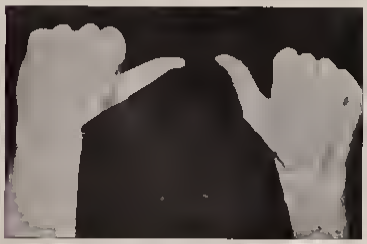


Fig. [illegible] digitorum [illegible] other [illegible] remain [illegible]



[illegible] dexed [illegible]

[illegible]

(1) [illegible]

(2) [illegible]

(3) [illegible]

(4) [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

TRAUMATIC ANAESTHESIA

[illegible] wounding is [illegible] experience. I [illegible] wounding in the [illegible] lost suffered an [illegible] explosion. He [illegible] hanging by the [illegible] of sustaining [illegible] pain? answered [illegible] by high velocity [illegible] at last in [illegible] questioning [illegible] that the sensation at the time was [illegible] a sudden [illegible] this that all wounds [illegible] from persuading others that the [illegible] appear at varying periods after wounding and [illegible] the nature and situation of a wound and the rapidity [illegible]

But [illegible] of wounds said that "The painlessness [illegible] accompanying all sudden and violent trauma [illegible] severely is required to bring about this [illegible] The same author writes: With modern projectiles [illegible] to make the chief impression on the mind [illegible] distance below the knee caused a feeling like [illegible] though it first it was painless. Another man [illegible] though in this instance as in others the [illegible] L. D. de Lannay R.N.V.R. 2 has [illegible] fragment partially severed his left median nerve in the [illegible] completely divided. It will be noticed that although [illegible] after being wounded the infliction of the wound was [illegible]

> It was [illegible] had been hit—I was soon where on my left arm. The [illegible] I noticed a tremendously heavy blow. There was a [illegible] I was hit in the arm. Just as when the ulnar nerve at the elbow [illegible] tingling numbness develops in the hand so [illegible] I felt a solid complete heavy [illegible] I was in a state of continuous mild [illegible] unconscious [illegible] I was still present when I regained [illegible] later. While awaiting initial [illegible] tingling in [illegible] as can slight sel [illegible]
>
> [illegible] myself—at no time did I grip my [illegible] the skin and muscles being, [illegible] the numbness. I wondered if my [illegible] I could not feel so [illegible] my [illegible] the wound I touch it, the wound [illegible] my left hand which I was almost [illegible] sensory powers—it did not know [illegible]

[illegible] three major factors involved in the [illegible] of pain with [illegible] the bodily [illegible] which [illegible] biological fact is [illegible]

[illegible] that it frightens [illegible] pass [illegible] Were [illegible] Why should it [illegible] similar impulses [illegible] less and [illegible]

Again, the causes of [illegible] (a) Physical [illegible] (b) Stimulation of [illegible]

When a man is [illegible] [illegible] presumed [illegible] [illegible] [illegible] times [illegible] the stimulus responsible for [illegible] Wolff [illegible] experimental [illegible] facts:

> [illegible]

This [illegible] suggests that it is a function which [illegible] relative [illegible] but also [illegible] [illegible] [illegible] later.

(2) Another factor which must be taken into account [illegible] is mental. I think [illegible] that [illegible] ment will [illegible] [illegible] In general [illegible] has to [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] painful.

(3) Lastly, in psychic [illegible] pain [illegible] most considerable hypnotic factors. Some [illegible] pain [illegible] The nature of the mechanism at work here is obscure but [illegible] [illegible] [illegible] [illegible] paraplegia with shocking [illegible] [illegible] [illegible] made a dramatic recovery under amytal narcosis. He had been in this state [illegible] a year and at some time during this period an enthusiastic medical [illegible] [illegible] occasions applied a glowing cigarette end to the anesthetized [illegible] in an attempt [illegible] demonstrate to the patient that he could in fact move his legs. However [illegible] movement took place and apart from suffering minor burns the scars of which could be seen the patient's condition remained stationary.

Here then is an example [illegible] there are many of the influence of the mind in not only diminishing but completely abolishing pain sensibility so far as one can judge by ordinary standards. The hysteric feels no real pain. It is not that he pretends not to feel pain. This mechanism must be at a high level of consciousness—a cortical phenomenon and one can only presume that similar [illegible] to a far lesser extent lie within the grasp of all of us. To every individual pain is a profoundly personal experience and it is only by the act of speech that we can communicate its intensity to others. Psychological factors of great complexity must play their part in determining the reaction to pain.

Pains and Paræsthesiæ

At the exact moment of sustaining the wound a sensation of pins and needles was experienced on the dorsum of the hand and in addition there was a feeling of numbness in the region of the elbow. Pollock and Davis [4] stated —

> At the time of injury the patient may experience pain described variously as pins and needles, as electric shock, a stab, a lightning pain, or as if the 'crazy bone' were struck. This may be referred to the cutaneous distribution of the nerve and fairly occasionally pain is felt at the elbow in radial injuries.

In this [illegible] both in the [illegible] elbow—the former no [illegible] through the medium [illegible]

[illegible] the first time. Its [illegible] and metacarpo [illegible] a point furnish also [illegible] the interior of the [illegible]

[illegible] and metacarpo [illegible] nerve which is a [illegible] the extensor pollicis [illegible] ultimately derived [illegible] Here [illegible] deep branch of the posterior interosseous nerve [illegible] mainly supplied the [illegible] to these experiments [illegible]

[illegible] kept [illegible] in [illegible] with [illegible] nerve [illegible]

[illegible] and [illegible] for [illegible]

[illegible] somewhat small [illegible] tissue and persisted [illegible] the elbow [illegible] of Halton's tea [illegible] supplied by the [illegible] which therefore [illegible] nerve [illegible] of pain has also been [illegible] upon by Pollock [illegible]

[illegible] particularly [illegible] and such movements [illegible] sensory changes in the hand. Presumably this [illegible] of the presumed stump of the severed [illegible]

[illegible]

[illegible] bilobe swelling was noticed on the dorsal [illegible] when the wrist joint was fixed. In [illegible] Kennon Wilson 6 in discussing injuries to [illegible] attributes them to over flexion of the [illegible] of the [illegible] swelling, the extensor [illegible] Gibbs Dimon

[illegible]

[illegible] forty seven days after secondary [illegible] skin with an [illegible] the posterior [illegible] at the time [illegible] form of superficial sensation [illegible]

[illegible] the usual responses—[illegible] by rapid healing. On [illegible] There was no un-

tation [illegible] small vesicles without any sur[illegible] with ma[illegible] The [illegible] an yellow fluid which coagulates. [illegible] fluid over [illegible] flour [illegible]

Pohlack and Dorris [illegible] time vasomotor [illegible] be demonstrated in the [illegible] applied by an injured nerve [illegible] irritating substances such as [illegible] in the normal as [illegible] On the normal side [illegible] but then state that with [illegible] there is no effect. [illegible] out in this case but [illegible] to the effects of an [illegible] appears that the [illegible] occurs on the injured side [illegible] in this case but the change [illegible]

The well known [illegible] of (1) Red line (2) wheal and (3) [illegible]

Of these the red line [illegible] capillary [illegible] ability respectively. The [illegible] an arteriolar axon reflex. On the [illegible] On insensitive skin areas [illegible] the wheal was represented by the [illegible] indicating an increase in capillary [illegible] the [illegible] substance on the press [illegible]

(2) *Paroxysmal Sweating of the Hand.*—[illegible] system is demonstrated by the [illegible] suture and for approximately the [illegible] the entire palm of the right hand. [illegible] the dorsum of the hand except [illegible] the third nail. I have seen an exactly similar phenomenon in a case of [illegible] spinal nerve [illegible] lesion in continuity (axonotmesis) shortly before [illegible] It was felt that the paroxysmal sweating was confined to areas of the hand innervated by [illegible] the median and ulnar. Autonomic nerve fibres are of course carried by the peripheral nerves but it is difficult to see why damage to such fibres in the musculo-spiral nerve should be mirrored by signs of autonomic dysfunction in skin areas supplied by other nerves. It seems that some central mechanism of a reflex nature was at work and that the resumption of activity by newly functioning autonomic fibres carried in the musculo-spiral nerve was referred by some central pathway to autonomic fibres in the median and ulnar nerves.

(3) *Venous Return.*—It was noticed that since sustaining the original wound the veins visible on the dorsum of the hand on the anterior aspect of the forearm in the ante-cubital fossa and also the basilic vein had been unusually in a state of collapse irrespective of such factors as temperature or the effects of [illegible] and massage. Seventy six days after secondary suture however on April 23 1943 the veins seen to be engorged and remained so thereafter subject to normal physiological fluctuations. It may be significant that nineteen days later the first voluntary movement of the brachioradialis muscle was observed. Venous return is greatly influenced by the action of surrounding muscles which by their contractions pump blood along the veins. It might therefore be expected that an unusual degree of muscular activity was responsible for the sudden onset of venous engorgement. This however was not the case and in fact all the muscles supplied by the musculo-spiral nerve were still paralysed. Another factor to be considered is the state of the capillaries whose Rouget cells receive sympathetic nerve fibres. Capillary dilatation leads to a diminished venous return because blood accumulates in the relaxed vessels. Conversely capillary contraction will cause an increased venous return. The reappearance of venous engorgement is described may have been partly due to re-innervation of capillaries with sympathetic fibres with a consequent increase in the tone of their walls. It would seem that the immediate return of voluntary movement in previously paralysed muscles was provided by a general increase in their blood supply which was in turn reflected by the increased venous return from the limb as a whole. It is possible that the autonomic nervous system was at least in part responsible for the increase in venous return.

[illegible] INITIAL VOLUNTARY M[illegible] BRACHIO RADIALIS

Th[illegible] movement was [illegible] nerve had been sutured [illegible] When the normal [illegible] to sustain [illegible] however [illegible] attempt [illegible] which [illegible]

(1) [illegible]

(2) [illegible]

(3) [illegible] the [illegible]

Rams[illegible] takes place in the peripheral [illegible] referred to as the [illegible] kinetic system [illegible] proto pathic [illegible] stratum [illegible] respectively [illegible] channels [illegible] sensation [illegible]

[illegible] suggests [illegible] responsible [illegible] of the [illegible] movement [illegible] and extra [illegible] system). It [illegible] by man are [illegible] to show [illegible] they [illegible] susceptible [illegible] Here [illegible] Hunt's [illegible] the nervous system [illegible] first sign [illegible] had been equally [illegible] system [illegible] nerve.

It [illegible] the [illegible] supinator jerk [illegible] a still more primitive movement [illegible] of any form of movement in the brachio radialis muscle [illegible] this may have been so. Unfortunately no [illegible] taken at the time and evidence is therefore lacking [illegible]

Th[illegible] system with the conception of "epicritic" and "protopathic" [illegible] postulated by Head (9). However subsequent [illegible] and Davies (10 and 11) have failed to confirm Head's findings [illegible] system has had to be abandoned. It seems equally unlikely that the [illegible] abnormal nature of muscular contraction can be attributed to a dual [illegible] the actual occurrence of such contraction cannot be doubted. The [illegible] responsible for the initiation of co-ordinated movements and not for the [illegible] muscles. The abnormal contraction of [illegible] in this particular case [illegible] of the mass movement of simultaneous contraction [illegible] muscles was attempted. It may be that an explanation of this phenomenon [illegible] the peripheral neuro-muscular mechanism, but the possibility [illegible] that the [illegible] or at any rate within the central as opposed to the peripheral [illegible]

[illegible] THE RE-INNERVATION OF PARALYSED MUSCLES

[illegible] voluntary contraction were noted and [illegible] cases [illegible] the greatest interval between observations [illegible] plotted. The results are shown in Table I.

TABLE I.—RETURN OF VOLUNTARY MOVEMENT

[illegible]	Days after section	Days after suture	[illegible]
[illegible]	182	95	Biceps [illegible]
[illegible]	199	98	Extensor [illegible]
[illegible]	198	111	[illegible]
[illegible]	98	198	[illegible]
[illegible]	[illegible]	178	Extensor [illegible]

The [illegible] in which the motor points of the above muscles lie be from an [illegible] line drawn [illegible] external epicondyle of the humerus [illegible] stated by Feinstein 12 to be on the [illegible] follows:—

TABLE II. AVERAGE DISTANCES OF MUSCLE MOTOR POINTS FROM THE STRAIGHT LINE DRAWN THROUGH THE EXTERNAL EPICONDYLE OF THE HUMERUS (FEINSTEIN)

[illegible]	Distance of motor point from [illegible] external epicondyle
Biceps [illegible]	[illegible]
[illegible] radialis longus	[illegible]
[illegible]	9.0 cm.
[illegible]	14.0 cm.
[illegible]	14.5 cm.

It will be seen that, except in the case of extensor pollicis brevis, the times at which voluntary movement returned to these muscles was directly related to the distances at which their motor points lay from the level of nerve section; the further a motor point lay from the level of nerve section the longer that muscle took to regain voluntary movement. The figures quoted are naturally an expression of the average and in the case of the extensor pollicis longus and brevis muscles a distance of only 0.5 cm. separates their motor points. Allowing for individual variation and so far as this [illegible] concerned, freely clinical observation and taking into account the small distance separating the two motor points, there is no reason to doubt that following injury to a peripheral nerve, muscles supplied by it regain voluntary movement according to the distances at which their motor points lie from the level of nerve section. The serial re-innervation of paralysed muscles is in harmony with the law laid down by Seddon, Medawar and Smith 13, who stated that, as regenerating fibres grow down, they re-innervate muscles in turn according to their anatomical order from [illegible].

RATE OF ADVANCE OF FUNCTIONALLY COMPLETE MOTOR FIBRES

The distance from the point of entry of the missile (which is taken to be the level of section of the radial nerve) to the external epicondyle of the humerus was 12.5 cm. The distances of the motor points which are being considered from the level of nerve section are therefore as follows:—

TABLE III.—DISTANCES OF MUSCLE MOTOR POINTS FROM THE LEVEL OF NERVE SECTION (E. TABLE III)

Muscle	Distance (in cm.) from the level of nerve section
Brachio radialis	12.5 + 0.0 = 12.5
Extensor carpi radialis longus	12.5
Extensor digitorum	12.5 + 9.0 = 21.5
Extensor pollicis longus	12.5 + 14.5 = 27.0
Extensor pollicis brevis	12.5 + 14.0 = 26.5

A table can now be constructed to show the relationship between the times at which voluntary contraction returned to each of the muscles under consideration, on the one hand, and the distances at which their motor points lay from the level of nerve section, on the other. It must be stressed that the expression "motor point" was taken by Feinstein to be that point at which a motor nerve is seen to enter a muscle. It is in fact an arbitrary anatomical conception and not the physiological truth one would wish it to be.

MUSCLE MOTOR POINTS FROM [illegible] BY INDIVIDUAL MUSCLES [illegible] MEASUREMENT

[illegible]	[illegible]	[illegible]
[illegible]	10·5	87
[illegible]	12·5	98
[illegible]	21·5	141
[illegible]	27·4	158
[illegible]	31·5	175

[illegible] relationships indicated in Table IV expressed [illegible] centimetres (see fig. 7)

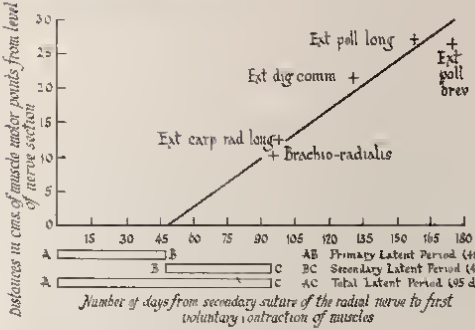


FIG. 7.—MOTOR RECOVERY: the advance of functionally complete motor fibres

the problem arises as to the manner in which the points plotted may be joined—by a straight line or a curve. The former will necessarily imply that the regenerating nerve fibres [illegible] from progressing at a uniform rate, the latter that growth relatively rapid at first has [illegible] with the passage of time.

[illegible] consideration will first be given to the conception of a uniform rate of growth of the [illegible] regenerating fibres. It must be stated at the outset that with the limited number of points [illegible] there are many straight lines passing along their course which can be drawn. The [illegible] any one particular line is therefore an arbitrary matter, but whatever line is [illegible] certain conclusions can be reached, particularly in association with observations [illegible] will be made later.

With all [illegible] limitations in mind, consideration of the graph leads to the following [illegible]

[illegible] by the method of extrapolation it can be seen that an initial latent period of forty [illegible] following nerve suture during which it must be assumed that the [illegible] stationary. It is represented by the interval A—B, and will be [illegible] primary latent period.

(2) From the point B at which growth of the fibres can be [illegible] to the point C at which the brachioradialis muscle showed its first voluntary movement a further period of fifty seven days has elapsed—the secondary latent period. Anatomical junction of the appropriate motor fibres with the brachioradialis muscle must certainly occurred prior to this and voluntary movement of the muscle represents the physiological union of motor fibres and muscle. Again no account can be taken of time lost between physiological union and the appearance of voluntary movement due perhaps to metapraxic akinesia. It is however proposed to take the time of the first voluntary movement as representing that of physiological union of motor fibres with muscle.

(3) Taking the straight line as indicating the rate of growth of functionally complete motor fibres (and not one of the five points on which it is based) then the average rate of growth from the end of the primary latent period onwards is approximately 2·4 mm. a day.

Seddon, Medawar and Smith stated that although estimation of rates of regeneration in the rabbit and the data from certain human cases strongly suggest that the process advances at a uniform rate another possibility must be considered. They state that experience in other fields of biometry favours the probability of a progressive diminution in the rate as it is almost invariably found that the rate of growth of anything from a whole organism to a fragment of tissue follows the same general tempo: it is fast at first and slows as the growth process approaches completion. They also found that in seven of their cases the latent period (primary latent period) as calculated by extrapolation fell on the negative side of the time axis, an absurdity from which they drew the only possible conclusion that in those cases the process of regeneration progressed at more than the calculated rate during the early days. They concluded that although the curve of regeneration may approximate to a straight line over a very considerable period there is evidence too weighty to be ignored that the process conforms more or less to that found in other fields, namely that the rate of regeneration decreases as the process approaches completion.

In this case the last point to be plotted and indicating the return of voluntary movement to extensor pollicis brevis suggests that the rate of growth had indeed fallen off as the last stages of recovery were reached. On the available data however proof of this is lacking. A consideration of the rate of progress of Tinel's sign is rather more suggestive of a diminution in the rate of growth as the progress of the regenerating fibres nears completion and will be considered shortly.

A rate of 2·4 mm. a day, as deduced from the graph (fig. 7), represents the progress of functionally complete motor fibres on the assumption that growth is proceeding at a uniform rate. Tinel [14] gave a rate of 1·0—2·0 mm. a day as the average rate of growth in regenerating peripheral nerves and Dustin [15] 2·0—4·5 mm. a day. For the radial nerve in particular the latter gives 1·0—3·0 mm. a day. Seddon, Medawar and Smith give the following average estimates for the rate of motor recovery:—

Nerve	Rate of motor recovery in mm. a day	
	Gradualness	Sudden
Radial	1·5	1·1
Ulnar	1·4	0·3

The Conception of the Anatomical Physiological Union Gap

So far the rate of progress of functionally complete motor fibres has been considered. However it stands to reason that an interval of time will elapse after motor fibres have made an anatomical junction with a motor point before physiological union as shown by the return of voluntary movement becomes possible. This is a conception of some interest and importance both clinically and theoretically. When muscles are deprived of their (peripheral) nerve supply atrophic changes follow from which there is no reason to suppose end plates are immune. Holmes and Young [16] stated that under such conditions motor end plates gradually disappear. It is reasonable to believe that the longer a muscle is deprived of its nerve supply and the more profound its consequent atrophy the longer will be the interval between anatomical and physiological union of that muscle and its motor nerve. It also follows that as a motor nerve regenerates the further a muscle lies from the level of nerve section the longer will be the time its end organs will have had in which to degenerate. In the case of those muscles whose motor points are situated more peripherally it will follow

[illegible] physiological union delay [illegible] will be longer [illegible] motor plants are more centrally placed. The [illegible] inward that regenerating fibres themselves grow [illegible] [illegible] conception that muscles with peripherally [illegible] [illegible] physiological union delay than their [illegible] [illegible] An attempt will be made to estimate the nature [illegible] [illegible] and on Tinel's sign must be detailed.

[illegible] ADVANCE OF FUNCTIONALLY INCOMPLETE NERVE [illegible] taken by the radial nerve down the arm [illegible] yielded simultaneous paraesthesiæ in the form of [illegible] in the dorsum of the hand supplied by that nerve [illegible] sensitive in this way to percussion was taken to [illegible] regenerating sensory nerve fibres had progressed [illegible] by Tinel's sign. Unfortunately the results of only [illegible] accuracy (Table V).

[illegible] V. [illegible] Cases

[illegible]	Number of days after nerve suture
[illegible]	70
[illegible]	78
[illegible]	95
[illegible]	202

[illegible] which will represent not the rate of advance [illegible] of the tips of functionally incomplete sensory nerve [illegible] organs (cf. motor end plates) not arising (fig. 8).

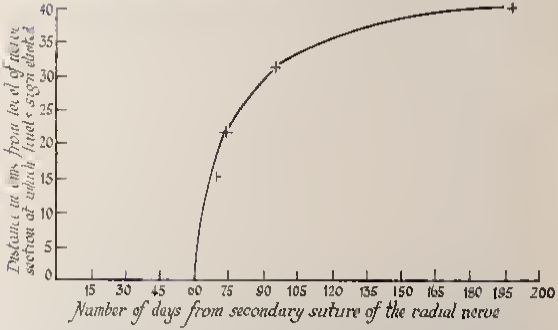


FIG. 8.—Tinel's sign: the advance of functionally incomplete sensory fibre.

As is to be expected, the way front for Tinel's sign is well in advance of that for functionally complete motor fibres. A further point of interest is that if the last point to be plotted on the curve is accepted, then the rate of progress of advancing sensory fibres is not represented by a straight line, which would indicate a uniform rate of progress, but by a curve, steep at first

[illegible] showing a rapid progress to begin at [illegible] by [illegible] [illegible]

The [illegible] sign is remarkable. Over the period 202 days it [illegible] a[illegible] (39·8 cm. divided by 202) amounted to 1·7 mm. [illegible] is the average [illegible] in Mitchell and Smith. However if the latent period [illegible] days in [illegible] process of extrapolation on the graph is [illegible] then the distance 39·8 cm. [illegible] in 142 (202 minus 60) days, giving an average [illegible] advance of [illegible] a day.

A [illegible] first 15 days after the latent period, however, from the 60th to the [illegible] day after [illegible] positive. The sign was elevated at a rate of approximately 2·5 [illegible] from the [illegible] mm. giving a rate of progress of no less than 14·7 mm. a day. A [illegible] particular [illegible]

A [illegible] for the rate of advance of a positive T. [illegible] intervals [illegible] the primary latent period are shown in Table VI. A [illegible]

TABLE VI. TIMES SIGN

[illegible]	[illegible]	Distance advanced in cm.	[illegible]
[illegible]	[illegible]	22·3	[illegible]
[illegible]	7·4	7·4	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

It appears that [illegible] with proceeds at a remarkable rate at the outset, [illegible] fall rapidly and progressively [illegible] less than 0·3 mm. a day in the final stages.

THE ANATOMICAL PHYSIOLOGICAL SIGNIFICANCE

When the rate of advance of functionally complete motor fibres was considered a straight line was used to signify a uniform rate of progress. In view of previous considerations however it seemed [illegible] that the rate of advance was not uniform and that the progress relatively equal in [illegible] with the passage of time.

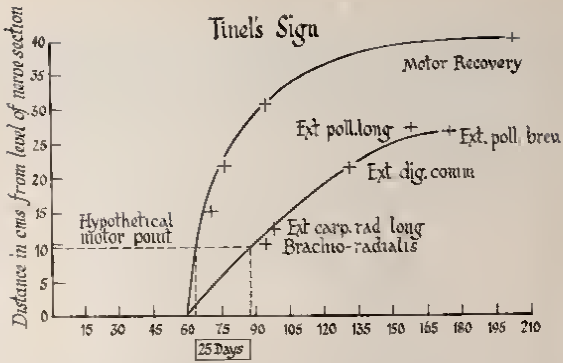
It has been [illegible] the idea of simplicity that the (primary) latent period for the graph representing the rate of advance of T. sign and of functionally complete motor fibres is approximately [illegible] the same. It is proposed further the straight line adopted when considering the rate of advance of functionally complete motor fibres to a curve, and to make the primary latent period for this curve the same as that deduced from the T. sign curve (60 days). The [illegible] of such a curve is also [illegible] empirical. Even so a consideration of the curve together with points of great [illegible] is [illegible]

In fig. 9 the two curves representing the rate of advance of functionally complete motor fibres and of functionally complete sensory fibres respectively are superimposed.

Estimation of the [illegible] of the [illegible] of a muscle. As an example of the method employed to estimate the [illegible] of an animal and physiological union of a motor nerve with its muscle, [illegible] a hypothetical muscle whose motor point lies at a distance of 10·0 cm. from the level of nerve section will be considered.

It will be seen from the graph (fig. 9) that functionally complete sensory fibres, as evidenced by a positive T. sign, have progressed to this level (10·0 cm.) on the 63rd day after nerve suture. On the assumption that motor fibres are travelling at the same rate as the sensory fibres, it must be that the fibres have travelled further in this distance, and that they have in fact made anatomical contact with the hypothetical motor point lying 10·0 cm. from the level of nerve section. It is, however, at this stage, no voluntary movement of the muscle takes place, or is indeed possible; physiological union between motor fibres and muscle has not occurred.

Voluntary movement of the hypothetical muscle does not take place until the 88th day, as shown by the curve representing the advance of functionally complete motor fibres.



Number of days from secondary suture of the radial nerve

FIG. 9. Tinel's sign and motor recovery

There has been therefore an anatomical physiological union gap of 25 days (88 minus 63).

A graph can now be constructed to express the time lag between the crests of the two curves and from it the theoretical anatomical physiological union gap (neuro muscular delay) for any muscle the distance of whose motor point from the level of nerve section is known can be deduced

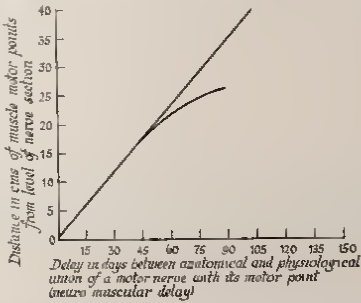


FIG. 10. Anatomical physiological union gap

As [illegible] the anatomical physiological union gap [illegible] steadily and relatively [illegible] distance at which a motor point lies from the level of the lesion increases [illegible] for the group of muscles under consideration is as follows (Table VII)

[illegible] THE ANATOMICAL PHYSIOLOGICAL UNION GAP

	Distance of motor point from level of nerve section	Distance of physiological union gap (in cm)
[illegible]	10 5	7
[illegible]	12 5	12
[illegible]	21 5	19
[illegible]	27 0	9 1
[illegible]	26 5	9 2

The [illegible] cannot be stated from the graph [illegible] the [illegible] points [illegible] Nevertheless [illegible] longer [illegible] movement [illegible] consideration This is not in fact the case As a result [illegible] the motor point of extensor pollicis longus lies outside the [illegible] but the theoretical principles put forward [illegible] For more [illegible] purposes the graph may be represented by a straight line which has been indicated

Taking [illegible] the fact that there may be a [illegible] time for [illegible] of a divided peripheral nerve both as regards the most favourable [illegible] of Schwann cells by the peripheral stump and the [illegible] of the peripheral stump making approximately the [illegible] the suggestion is put forward that on the [illegible] the longer will be the anatomical physiological union gap [illegible] concerned be cause of a progressive atrophy [illegible] the graph [illegible] the angle [illegible] by the [illegible] and the time axis It would be [illegible] periods of delay between nerve section and [illegible] could be constructed to show the effect on the [illegible] to place this [illegible] as to the optimum time for [illegible]

THE PRIMARY LATENT PERIOD AND LATER INTERVENING NERVE REGENERATION AND SECONDARY SUTURE

In the case under discussion it has been stated that for 60 days after [illegible] of the radial nerve no advance of regenerating nerve fibres took place [illegible] at this stage to consider what changes occur in a divided peripheral nerve and [illegible] ference to the primary latent period

Holmes and Young stated that at least 6 factors influence the success [illegible] suture —

(1) The power of the central stump to send out nerve fibres This is not [illegible] for periods of up to nearly a year after injury

(2) The power of the stumps to unite a divided path [illegible] from the peripheral stump This process is at a maximum two to three weeks [illegible] of a nerve in the rabbit

(3) The total diameter of the peripheral stump shrinks in the later stages of degeneration sometimes by as much as half Good apposition of the nerve ends is the [illegible] difficult

(4) The Schwann tubes in the peripheral stump shrink and [illegible] the central stump enter each one The chances of successful nerve connections [illegible] reduced

(5) After delayed suture medullation is delayed in the peripheral stump and the fibres remain of small diameter for much longer than after primary suture This may persist indefinitely and also functional recovery must remain always of inferior [illegible] after delayed suture

(6) [illegible] sensory end organs gradually [illegible] end or, [illegible] suture the process is hindered [illegible] less satisfactory [illegible] primary suture.

[illegible] such and highly important [illegible] nature [illegible] after nerve suture [illegible] Schwann cells [illegible] connecting [illegible] and the central [illegible] peripheral stump [illegible] uses as to the [illegible] suture. Holmes and [illegible] that the pro[illegible] peripheral stump is [illegible] (ribbon) two to [illegible] If the [illegible] secondary nerve suture as [illegible] advantageous in the [illegible] primary. This should be done whenever [illegible] of secondary nerve [illegible] gap between [illegible] non-amputated [illegible] could be [illegible]

[illegible] Regeneration

[illegible] that the skin area of the [illegible] secondary stump. In this connection [illegible] estimated that [illegible] after a [illegible] that [illegible] aesthesia [illegible] that [illegible] sharp [illegible] possible [illegible] peripheral [illegible] with the calculated [illegible] importance both from the [illegible] and [illegible] initiative in [illegible] the [illegible] lengths of the [illegible]

[illegible] Reaction of Paralysed Muscles and the Return of Voluntary Movement

[illegible] of paralysis [illegible] with faradic and galvanic currents was carried out at [illegible] December [illegible] 1912 (6) and September 7 1943 (270) (213). The results are [illegible] in Table VIII.

Table VIII. [illegible] Reactions of Paralysed Muscles [illegible] 1912 (6) 1943 (270) (213)

[illegible]	Days from Injury	[illegible]	[illegible]	Calcination
[illegible]	[illegible]	[illegible]	All muscles react	All muscles react
[illegible]	[illegible]	[illegible]	No response to faradic stimulus	Sluggish response to all muscles
[illegible]	[illegible]	[illegible]	No response to faradic stimulus	Sluggish response to all muscles
[illegible]	[illegible]	[illegible]	No response to faradic stimulus	Sluggish response to all muscles
[illegible]	[illegible]	[illegible]	No response to faradic stimulus	All muscles respond except Extensor indicis Abductor pollicis longus Extensor pollicis longus and brevis
[illegible]	[illegible]	[illegible]	No response to faradic stimulus	All muscles again responded
[illegible]	[illegible]	[illegible]	Both faradic and galvanic	All muscles responded
[illegible]	[illegible]	[illegible]	All muscles responded except Extensor indicis Abductor pollicis longus Extensor pollicis longus and brevis	All muscles responded

[illegible] the first six days after division of the radial nerve the electrical reactions [illegible] faradism and galvanism remained normal. During the following 20 days the [illegible] faradism progressively weaker until at the end of [illegible] (January 6 1943) all [illegible] responses were lost. The galvanic responses however remained brisk.

Brachio radialis [illegible] faradic response 210 days after secondary suture of the divided radial nerve and was the first muscle to do so. The return of the faradic response to a paralysed muscle is often [illegible] to indicate an unnoticed return of motor activity. It is therefore of interest to note that in this case brachio radialis had already regained voluntary movement by May 12 1943 (152) (95)—that is 115 *days but to the return of the faradic response.*

Head and Sherren [15] quoted five cases of primary suture of completely divided ulnar nerves and stated that —

> *it so happened* (that as my event that in each of these cases [illegible] was re discovered in the same [illegible] of voluntary power.

The likelihood of this being coincidental is enhanced by [illegible] statement that in a comparable case of median nerve paralysis voluntary power returned five weeks before any faradic response could be obtained. Furthermore in a case of radial nerve paralysis with primary suture 34 days after division of the nerve is described in which voluntary power returned 56 days before a response to the interrupted current could be obtained. It seems clear that in that no reliability can be attached to the return of the faradic response in [illegible] of impending motor recovery as the return of voluntary movement may occur weeks even months earlier.

On September 7 1943 (270) (213) all the affected muscles had responded to faradic response except (1) extensor indicis (2) abductor pollicis longus (3) extensor pollicis brevis and (4) extensor pollicis longus.

It is of interest to note that from June 7 1943 (178) (121) for a period of 12 days this same group of muscles failed even to respond to the galvanic current and that the degree of their eventual motor recovery was to be less complete than in the rest of the paralysed muscles. No other muscle ever lost its galvanic response entirely although such responses became sluggish in every case between January 1 1943 (35) and June 7 1943 (178) (121). The muscles mentioned therefore at one time lost their galvanic responses were the last to regain faradic responses and eventually exhibited a lesser degree of motor recovery than other muscles. It is suggested that by chance these muscles received comparatively fewer motor fibres than did others and that the delay in the reappearance of their faradic responses was due to a smaller number of functioning motor units being incapable of giving a faradic response sufficiently marked to be observed clinically. The loss of galvanic responses in the same muscles can be explained on the same quantitative basis. In addition these muscles are the most deeply situated of the extensor group and it is possible that when carrying out the tests a galvanic current was used of insufficient strength to overcome the increased resistance due to intervening structures.

In conclusion it seems clear that the routine electrical muscle tests commonly employed and based on faradic and galvanic stimulation of muscles are of extremely limited value as a guide to prognosis when considering peripheral nerve injuries. Bawerns [17] wrote as follows —

> A puzzling aspect of nerve regeneration is the frequency with which return of voluntary power precedes that of the response to faradic stimulation. [illegible] this [illegible] the property of conduction and the property of excitability of nerve. It is not surprising, therefore to find each returning, separately. Excitability of nerves to electrical stimuli must be intimately associated with the integrity of the polarizable surface of the nerve fibre. Consequently it is not far fetched to postulate that nerve fibres and their sheaths regain the requisite electrical properties independently from axis regeneration.

The same author described the construction of "Intensity Duration Curves" and it seems probable that the future of muscle testing as a guide to prognosis lies in this direction.

Inco ordination and the Somatic Afferent Nerve Fibres

In spite of the fact that in this case the right hand has recovered every lost movement to practically a full extent and that a casual observer would not be able to distinguish the

recovered in the hand there is in fact a marked subjective change present in the former.

It must be remembered that a peripheral nerve of which the radial is a suitable example contains the following types of nerve fibres in varying proportions —

Somatic fibres

(1) Efferent motor fibres to muscles
(2) Afferent
  (a) Exteroceptive { Epicritic sensation / Protopathic sensation
  (b) Proprioceptive deep sensation from muscles tendons fascia ligaments and joints and periosteum

Visceral fibres

(1) Efferent
(2) Afferent
  Fibres passing to and from all structures supplied by the autonomic nervous system

It is not sufficiently appreciated that in what is known as a motor nerve there are many afferent fibres Samson Wright p 43 in discussing afferent impulses in peripheral nerves wrote —

The afferent impulses in the peripheral nerves are carried partly in sensory cutaneous nerves and partly in cutaneous sensory nerves the former being afferent fibres carrying motor nerves conveying impulses from the deep structures such as the muscles tendons ligaments periosteum and joints the latter being motor nerves conveying impulses not based solely upon muscle and joint sensation but also upon tactile sensation that about 40 *per cent of the fibres in a motor nerve are afferent* (this mine own) and have their cell bodies in the posterior root ganglia

The radial nerve is of course almost entirely motor in the generally accepted sense but there is still a small and variable sensory distribution to the skin of the hand by its anastomosis with the ulnar digital branches and supplies the extensor muscles of the upper limb and the supinator muscle However in spite of this discrepancy in its motor and sensory distribution it will contain relatively large numbers of afferent fibres both somatic and visceral as detailed above In particular there will be in the radial nerve fibres conveying proprioceptive sensation from the deep structures including muscles and joints and it is partly through the sensations so received that we have the feeling that the periosteum in space of the arm and particularly of the hand and fingers is appreciated Fibres of similar nature contained in the median and ulnar nerves have to do the same

Perfectly optimum results after nerve suture are only possible if each several nerve fibre is directed into the Schwann tube in the peripheral stump which it originally occupied This is in most cases impossible Only by this means could it be assumed that a suitable peripheral end organ would be in appropriate end organ would occur in every case This is obviously impossible in practice and it must therefore be that for some reason or another only limited number of such successful reunions will take place between fibres of all kinds from the central stump to a suitable nerve and appropriate end organs

Thus there is no doubt that nerve fibres only in true motor fibres and somatic afferent fibres can be properly consulted from muscles and joints It is clear that in the case of the radial nerve the radial muscles functioning motor fibres after full recovery following nerve suture will be no doubt less than the number of such fibres originally intact in the radial nerve to which previously had supplied a certain muscle may after nerve suture be directed to a totally different muscle From these considerations it would seem that the number of functioning motor units in muscles that have recovered by the use of the radial Lightning after nerve suture will always be less than was originally the case with the nerve in question Muscles which have recovered in this way will therefore be in actually weaker than originally and in fact can only make up for a limited number of functioning motor units by a hypertrophy of those muscle fibres which have been successfully Again in view of the fact that the allocation of motor fibres will have occurred following nerve suture it must be necessary for the motor cortex to undergo a process of re education in order for it to utilize easily the new motor pattern with which it is confronted Here then are two potent factors to support by theory

the observed fact that when after nerve suture motor recovery is fully restored by the usual objective tests there may in fact still be subjective defects present of the greatest significance.

In a similar fashion somatic afferent nerve fibres carrying proprioceptive sensibility from the muscles and joints will fail to make satisfactory reconnections in every case. Therefore the number of such afferent fibres after nerve suture capable of carrying out their original role will be diminished and in addition and in a comparable manner to the re-allocation of the motor fibres already mentioned, fresh afferent pathways will have been formed so that a re-education of the sensory cortex and also of the cerebellum will be necessary before impulses from the deep structures can be correctly interpreted.

Incoordination of the hand than after nerve suture (radial, median or ulnar) for the facts apply equally to them all) is supported on the following theoretical grounds:

(1) Recovered muscles must always remain potentially weaker than they originally were on account of a smaller number of functioning motor fibres.

(2) The motor cortex must here be induced to operate a new motor pattern.

(3) The number of functioning somatic afferent fibres subserving proprioceptive sensibility will be diminished, thereby curtailing the amount of sensory information necessary to the sensory cortex and cerebellum.

(4) The sensory cortex and cerebellum must be re-educated in order to interpret correctly a new sensory pattern.

In discussing the factors which influence movement, Simson Wright (p. 19) says:—

> The essential basis of all purposive and effective movement is a sensory impulse. Sensory impulses in fact, without which the motor centres are rendered quite ineffectual, are necessary for the initiation of all voluntary movements, for the production of purposive impulses, but not only in these instances but in the special function of the cerebellum in the control of posture and equilibrium, of course.

As regards the actual subject of this paper, in this case the results:

(1) A loss of spontaneity in the use of the hand. Doing up and undoing buttons and button-holes, writing, sharing and stroking are examples of actions which I found I had to demonstrate that the right hand was not in fact normal in all respects.

(2) A diminished appreciation of the position of the hand in space. For example, if a match was struck spontaneously it happened that the match box was held by the thumb and index finger by the head of the match.

(3) A loss of the ability to extend the tips of the recovered muscles and fully without others contracting at the same time. For instance, with the hand flat on a table it was impossible to raise the index finger without at the same time partially involuntarily extending the thumb. The reverse involuntary extension of the index when the thumb was extended voluntarily did not occur. It would seem that the motor fibres which originally were responsible for the movement of the index finger had after suture been diverted to supply the extensor muscles of the thumb. Further, the motor cortex and the cerebellum, in the movement of extending the index finger, the extension of the thumb was also inhibited and vice versa, and abnormal motor pattern. Similar phenomena occurred with the left (non-dominant) hand. Other such instances were found in similar fashion, the right being taken from the right cortical hemisphere and the left in a similar fashion in cases where the dominant side performed both the sensory and motor functions.

When the relatively important role of the afferent fibres is considered, it is not in the least surprising that after nerve repair the motor impulses which are found to be faulty. In judging the end result of the motor nerve suture, the question is what extent the ill-formed impulses have become normalized, so that as far as motor function is concerned, they result in only a slight disability, any deficit however slight, affecting dominant pathways will be reflected in a relatively great and perhaps permanent diminution in the dexterity with which any such weakened muscles can be used.

The implications of these observations when such a highly complex mechanism as the hand is at stake, are really far-reaching.

THE ELBOW JOINT IN RADIAL NERVE LESIONS

Section [illegible] of the injured radial nerve was carried out on the 5th day after injury [illegible] time there was full movement [illegible] elbow joint. However, amputation was [illegible] to flex the elbow to approximately a right angle in order to overcome [illegible] the two stumps of the injured limb. No attempt was made to extend the elbow [illegible] 145 days following amputation [illegible] a plaster was applied to that effect [illegible] days after operation the arm home, kept in a sling for the remaining period of 91 days.

At the [illegible] this period of immobilization [illegible] July 1, 1943 (202) (145), the elbow could [illegible] extended to 124 degrees and passively to 126 degrees. Full extension was not [illegible] further 163 days had passed [illegible] an average of approximately one [illegible] and passive extension every 2.9 days (fig. 11).

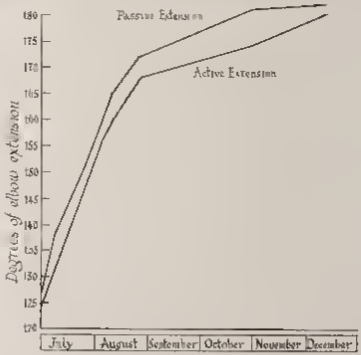


FIG. 11. Extension of elbow joint after fixation in flexion, February 6, 1943, to July 1, 1943.

Attention is drawn to the fact that at the limit of extension on any one occasion paresthesia was experienced in the insensitive skin area of the hand supplied by the radial nerve. This sign was treated as a danger signal that the radial nerve was being over-stretched and further attempts at extension on that day were abandoned.

The obstacle to regaining extension did not lie in the elbow joint itself and was quite definitely due for the most part to a shortening or spasm of the biceps muscle. Ignoring the fact that an over-stretching of the shortened radial nerve was the paramount factor to be considered, it can be said that both passive and active extension on any one occasion was initially limited by a pain felt in the biceps tendon. Indeed at the limit of extension this tendon could be seen and felt to be in a state of extreme tension. In addition the biceps muscle-belly felt firmer than did its fellow even when both muscles were completely relaxed. Pollock and Thomas (p. 205) have noted that [illegible] injuries to the radial nerve in the middle of the [illegible] associated with ankylosis of the elbow. When this occurs early it is associated with [illegible] of the biceps.

It seems probable that the initial change lies in spasm of the biceps. Later changes of a more permanent nature may occur in that muscle and particularly in its tendon and in the fibrous expansion of the tendon—the bicipital aponeurosis. Secondarily to these changes

the elbow may undergo a fibrinous ankylosis. From this it seems clear that so far as injuries to the radial nerve are concerned great care should be exercised to maintain full movement at the elbow whenever possible.

TREATMENT.—THE RADIAL SPLINT.

The following observations are based on and are applicable to the case described, but in many instances may be applicable to peripheral nerve injuries in general.

Treatment of this case may broadly be divided into three stages: (1) immediate—i.e. at the wound; (2) intermediate—i.e. from the time of injury from (1) to secondary nerve suture and (3) routine—from the completion of stage (2) to the full recovery of function.

(1) *Immediate Treatment.*

The avoidance of sepsis is of paramount importance. It is probable that under battle conditions surgical intervention which should be undertaken at the first opportunity will not be immediately available. In this case an interval of about 23 hours elapsed between wounding and surgical treatment. Although surgery may not be possible for a variable period other forms of treatment are available.

(*a*) *Chemotherapy.*—Sulphanamide powder should be dusted into the wound. Care should be taken not to apply an excess of sulphonamide powder in the immediate vicinity of a peripheral nerve as this is in itself sufficient to cause extensive damage to its fibres.

(*b*) *First-aid Dressing.*—This will at least tend to prevent further organisms entering what may, with certainty, be taken to be an infected wound.

(*c*) *Anti-sera.*—(i) Gas gangrene. (ii) tetanus.

(*d*) *Surgery.*—Exploration of the wound should take place at the first suitable opportunity. The skin edges should be trimmed, damaged muscle excised and pieces of clothing and debris removed. Adequate drainage must be ensured and fascial sheaths incised if necessary. If a metallic foreign body is known to be present, i.e. entry without exit wound or on radiological evidence, it should only be removed if this can be done without difficulty. A prolonged search for an elusive foreign body may do more harm than good by damaging intact tissues.

It is not intended to discuss in detail the points for and against primary or delayed suture of the divided nerve. It may be pointed out, however, that 37 days elapsed in this case from severance of the nerve to the time of secondary suture. In view of the fact that the functional end-result has been perfect, it would appear that no outstanding advantage could have been gained by primary suture. If there is any untoward difficulty attached to the operation or doubt as to the advisability of primary suture a conservative attitude should be taken and suture of the divided nerve left to some future occasion. Theoretical considerations affecting nerve suture have been discussed earlier.

Contra-indications were present to primary suture in the case described.—

(i) The wound contained pieces of clothing and was certainly infected. The danger of frank sepsis setting in was a real one.

(ii) The peripheral end of the divided radial nerve could not be found. No extensive search for it was made and in view of the extensive incision that had to be made in order to find it at the later operation this conservative treatment was fully justified. It should be noted that the proximal end of the nerve was anchored by means of a single catgut suture to a neighbouring muscle mass in order to facilitate its exposure at a future date, and this seems a useful procedure.

After initial debridement sulphonamide powder was insufflated into the wound and a small corrugated rubber drain inserted and left in situ for 48 hours. A course of sulphonamide was given by mouth post operatively.

(*e*) *Splinting.*—Some form of splinting from the outset is necessary. On no account should the so-called fish tail splint be employed in which not only the wrist but also the fingers and thumb are immobilized in extension. Joints become stiff in a remarkably short period of time and the application of such a splint is to court disaster as far as the joints of the fingers and thumb are concerned. Such a splint was used in this case with results stressed earlier in the paper. The argument is put forward that a splint of this nature completely relaxes the paralysed muscles. Relaxation of the paralysed muscles is indeed necessary, but too much importance can be attached to this point. After dispensing with the fish tail splint at the

end of the [illegible] with consequent stiffness of joints as described [illegible] the cock up splint was worn day and night for approximately seven months [illegible] splint was obtained. The cock up splint was well padded and kept in position by [illegible] crepe bandage. With this splint of course the fingers and thumb [illegible] position of flexion but no harm seems to have resulted from this stretching of paralysed muscles. With the wrist firmly supported in this way and the thumb and fingers free the hand was of some use as once an object had been placed in the palm of the hand it could then be grasped firmly enough. A habit was soon acquired of passively extending the fingers and thumb at frequent intervals throughout the day and this served to keep all the joints free. On some days and frequently at night the splint was not worn at all with no apparent harm resulting.

The radial splint.—As soon as possible a radial splint should be obtained. This consists essentially of two function elements: (i) a cock up splint to fix the wrist joint in the position of maximum function, i.e. slight dorsiflexion, and incorporated with it (ii) an extensor mechanism, i.e. elastic bands passing from the back of the wrist over an artificial bridge on the dorsal aspect of the metacarpus to all the digits.

These two components will now be considered in more detail.

(i) *The cock up splint.*—This should reach from the mid point of the flexor aspect of the forearm to a point not extending beyond the distal transverse skin crease on the palm of the hand. The latter limit is of the greatest importance as the fingers cannot be fully flexed if this limit is exceeded. The surface of that part of the splint which is to be in contact with the palm of the hand should be padded. Its shape is important. The radial edge must be concave—the concavity to correspond with the contour of the base of the thenar eminence when the thumb is opposed to the little finger. The shape of the ulnar border is not of much significance. However, in view of the tendency of the hand to pass into ulnar deviation when the elbow is flexed, the suggestion is made that this border of the splint could be extended to hook round the ulnar border of the palm to form a gutter in which the ulnar border of the hand could rest. This point is of interest in the case described because the elbow was kept permanently flexed for many months. The action of gravity in causing the hand to pass into ulnar deviation was practically inevitable, and it is felt that such a gutter would have been a worth while improvement. In an uncomplicated radial palsy in which the affected limb could hang vertically, such an addition to the cock up splint would not offer any advantage.

The cock up splint is kept in position by two broad straps—one around the forearm and the other around the wrist. Both should fit snugly—the fact that the forearm is tapered long kept in mind. The shape of the distal edge of the strap around the wrist is important. It should be continuous with the concave edge of the cock up from the proximal point of the thenar eminence. Then the edge should be extended onto the dorsum of the metacarpus to form a tongue-like projection—the apex of the tongue reaching a point about one inch short of the metacarpo phalangeal joint of the middle finger. The ulnar border of the tongue joins the wrist strap at the ulnar border of the wrist joint.

(ii) *The extensor mechanism.*—The principle involved is that elastic bands pass from the dorsal aspects of the digits to a fixed point on the dorsum of the metacarpus. In practice this is achieved as follows—a separate description will be given for the thumb.

Snugly fitting finger stalls are made for each of the fingers. These finger stalls should terminate in the proximal to the proximal inter phalangeal joint of each finger—a point of the greatest importance. The pull of the elastic bands which is to replace the action of the paralysed extensor muscles must be exerted on the distal ends of the proximal phalanges of the corresponding fingers. Thus with these proximal phalanges extended by artificial means it is possible for the remaining two phalanges of each finger to be voluntarily extended by means of the appropriate sublumbrical muscles. If the pull is exerted on any point distal to the proximal inter phalangeal point of a finger a corresponding loss of control in extending that finger will be noticed and this loss of control will become accentuated as the point of pull is shifted distally. Another point is that if the pull comes from near the distal end of a finger when the finger is fully flexed the elastic tends to slip under the finger where its action may be compared to the string of a bow i.e. the pull of the elastic then serves to keep the finger in full flexion and extension becomes difficult or impossible.

From these four optimum points on the four fingers the elastic bands from the finger stalls should be taken over a bridge on the dorsum of the metacarpus to terminate at four

closely placed eye hooks on the strap around the wrist. The bridge can be constructed from a roll of soft leather and stuffed with suitable material to a solid consistency. It is attached to the tongue which lies on the dorsum of the metacarpus at the junction of its middle and distal thirds. A strip of leather ⅜ in. wide should be stitched along the uppermost surface of the bridge leaving four flat loops through which the elastic bands may pass. These loops and the eye hooks on the back of the wrist should be so arranged that when the fingers are fully extended the line of pull of the elastic band exerted on each finger is united with that of the extensor tendon for which it is a substitute.

The thumb.—It is essential that the thumb should be considered as a separate entity. The principles involved are similar but extension of the thumb takes place in a plane at right angles to that for the fingers. The thumbstall should terminate ⅜ in. distal to the metacarpo-phalangeal joint of the thumb. A miniature bridge is constructed and placed at the junction of the middle and proximal thirds of the first metacarpal. The eye hook is placed at a point corresponding to the base of the first metacarpal. With the arrangement described the pull of the elastic not only extends the thumb in the proper manner but in a plane at right angles to that for the fingers but also prevents the first metacarpal from falling inwards.

It should be stressed that with the radial splint described above the only joint which is fixed is the wrist joint. This joint is immobilized in half dorsiflexion and unless great care is taken to move it frequently to its full range of flexion *with the fingers flexed* the paralysed extensor muscles may develop contractures very rapidly—as happened in this case. It is interesting to observe that the shortening of the extensors was of such an extent that with the first clenched the wrist automatically took up its position of optimum function in half dorsiflexion. It was as though the paralysed extensor muscles had made the attempt to support the wrist in this optimum position by some other means than their usual one.

(2) *Intermediate Treatment*

This covers the period of recovery from the general and local effects of wounding and of initial debridement to secondary suture of the divided nerve.

(*a*) All the joints of the paralysed limb including elbow and shoulder joints must be put through the full range of movement daily to avoid the development of any stiffness.

(*b*) Physiotherapy—massage, massage, heat (wind bath, infra-red) and galvanic stimulation of the paralysed muscles, all contributing, finally to recovery of the paralysed muscles, adds materially to the comfort of the patient and keeps the muscles in the optimum condition for improvement.

Nerve Secondary Suture.—At operation it is more than likely that undamaged sensory nerves will be divided. In the case described the posterior cutaneous nerve of the forearm was unavoidably sectioned in order to reach the radial nerve, but this was necessary. No attempt to suture it was made, but as a result there is not only a strip of skin sensitive only to prolopathic stimuli in the area of its distribution but also an extremely tender point in the operative scar, due presumably to the presence of the stump of the nerve. It is of interest that any form of sensation has returned to the area supplied by the posterior cutaneous nerve of the forearm, and even of the lateral thigh, for this nerve was not sutured. Further, the nerves subserving proprioception, so to speak, found their own way, or else the cutaneous supply has been derived from the adjacent sensory nerves.

The emphasis at this stage of rehabilitation must be stressed. Before splinting, the patient is difficult to persuade that the arm is paralysed. The application of a slight splint of transparent celluloid to the dorsum of the forearm and hand normally prevents the patient from picking, dislocating and injuring the paralysed parts, which are often in the condition of a "pain in the neck" to the patient. After the splint is removed, it is not uncommon for the patient to complain of a tender area of skin, which is slightly hot to touch, and which is described as "tender" or "painful." It is suggested that the patient should be made to understand that this is due to the fact that the skin has been deprived of its normal sensory nerve supply, and that it will for some reason, this is not well understood, take at least a year for any nerve to reach its end organ.

(3) *Late Treatment*

In this stage, which lasts from the 12th to the 18th month, the following are of importance: (*a*) Massage, (*b*) Light massage, (*c*) Pressure movements of all joints of the limb, and (*d*) Occupational therapy.

These procedures should be carried out daily if possible. At the same time an occasional rest day is beneficial as over a period of many months strict daily treatment becomes monotonous. The approximate routine followed in this case was to make Saturdays and Sundays rest days without treatment of any kind. Short periods of sick leave up to a week and on one occasion up to a fortnight were also treated as rest periods. The object of treatment must be to keep the limb in the best possible condition for the subsequent recovery of the paralysed muscles.

Investigations to judge what progress is being made can be combined with treatment. It is customary to carry out routine muscle tests with galvanic and faradic currents with a view to noting when a response to the latter current returns to paralysed muscles. In the case of the radial voluntary movement returned to individual muscles many days before they showed any response to faradic stimulation—115 days in the case of brachio radialis. It is not therefore probable that there is necessarily any close relationship between the return of voluntary movement and the reappearance of a faradic response in a paralysed muscle. Such muscle tests take up a great deal of time and it is difficult to see what useful purpose they serve. More appropriate would appear to be observations based on the construction of electrical stimulation curves as described by Bauwens and which have already been mentioned.

On individual muscles regain voluntary movement an objective assessment of progress is made by the procedure outlined in The Medical Research Council's War Memorandum [illegible] *Electrical Examination*.

Notes on the Facilitation of Early Movements

As regards the initial return of voluntary movement to a particular muscle, it was found that such movement was greatly facilitated in the early stages of recovery if the corresponding muscle in the sound limb was simultaneously contracted.

The initial use of the affected limb is better than any form of physiotherapy. With the aid of the radial splint described the hand can be used efficiently for all but the finest work and even in this, it is possible although somewhat laborious. Every encouragement should be given to use the hand wherever possible. In this respect occupational therapy can play an important part. Work implying relatively coarse movements only should be done so long as a splint for extensor movements is placed entirely on the radial splint. As voluntary power returns work of a fine character should be undertaken until eventually needle work or other work involving fine movements can be done.

In the case under discussion the elbow joint became stiff in 80 degrees of flexion on account of an unnecessarily long period of immobilization in that position. The position of 90 degrees of flexion was found to be necessary in order that the gap of 4·0 cm. between the divided ends of the radial nerve could be eliminated. Regaining full extension of the elbow joint proved a long and slow process and was achieved mainly by active movements. Passive stretching was employed with great care. Contra-indications to further stretching on any occasion have already been mentioned and were —

(i) Pain in or around the insertion of the biceps tendon which had contracted.

(ii) The appearance of paraesthesia in the anaesthetic area of the hand while stretching was in progress.

It was found that quite energetic stretching could be employed before either of these danger signals made appearance. When either of them did so further attempts at stretching were at once abandoned.

(*To be concluded*)

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SOME ASPECTS OF PERSONNEL RESEARCH IN NORTH AMERICA[1]

By Surgeon Captain R. W. [illegible]

In the notice of this meeting of your Clinical Society [illegible] short talk to you is [illegible] as a Lecture on the United States Medical Sc[illegible] I do not propose giving [illegible] a Lecture and as far as the United States Medical S[illegible] I intend dealing, mostly with some aspects of personnel and physiological [illegible]

I [illegible] Medical Specialist at Haslar in 1942 when I [illegible] Washington as British Naval Medical Liaison Officer. During my time there I [illegible] Head Quarters [illegible] U.S. Naval Medical Service in Washington and [illegible] I [illegible] what is going on. I was informed [illegible] when the United States Times were just commencing the [illegible] from [illegible] five million to ten million, like Topsy, to five millions.

The U.S. Naval Medical Service is organized [illegible] of the most obvious differences from the British prodigal display [illegible] possible in our country. This is most obvious to me at the [illegible] numbers of medical officers which are [illegible] the Royal Navy. One can [illegible] picture in Hospital [illegible] when we would have three medical officers in the [illegible] Navy was would have [illegible] Personally I am not [illegible] that there [illegible] advantage in these large numbers.

Another large difference is the fact that the U.S. Navy [illegible] care of dependants. In all large naval centres [illegible] for families and in peacetime hospital treatment is [illegible] about 1927 and the U.S. Naval Medical Officer told [illegible] a great influence in the development of [illegible] particularly in peacetime treating wives and children [illegible] and interest for the development of their professional knowledge [illegible] possible when dealing with men alone.

As a medical specialist one had become rather like a [illegible] but hundreds of reports on hundreds of men suffering or not suffering [illegible] diseases. In my new appointment it soon became obvious that the most important task to be undertaken was not Medicine in its ordinary practice which apart from [illegible] personnel medicine on the [illegible] the man to fit the machine or if necessary to alter the machine to fit the man.

I say this very quickly when I was introduced to the U.S. Submarine Service where extensive work was being done by the doctors in demonstrating the loss of efficiency in high temperatures and humidity or through raised carbon dioxide or lowered oxygen in the submarines. The doctors were [illegible] able to show that at certain levels there was a certain decrement in performance and health and to suggest measures such as air conditioning, dehumidification and carbon dioxide absorbents to remedy this.

Please do not misunderstand me here. It was not a question of the doctors saying, do this or do that and its being done. It is really a question of close collaboration between the Submarine Command, the doctors and the constructors. A submarine with given operating radius and armament has only got a certain restricted volume or space and the doctor must show clearly that there is some given increase in operating efficiency of personnel if extra gear is to be put in. This extra gear may represent one less torpedo or possibly some diminished speed. In this case it was possible to show the overall gain by making the changes.

Before I went to the United States when I was a medical specialist I used to think that there was a tremendous amount of nonsense talked about Aviation Medicine and believed that Aviation Medicine was a lot of baloney which had been magnified into a speciality by a few individuals who wanted to make out that they knew more about the subject than anyone else.

I realize now, however, that there is a very large amount of specialized knowledge which the doctor who is working with flying personnel must have. He certainly must have an understanding of the physiological and mechanical principles involved in flight as well as

[1] A paper read before the Clinical Society, R.N. Auxiliary Hospital, Barry, Trinity

a detailed knowledge of aircraft and the various devices used to help man to adapt himself to altitude and the emergencies which occasionally result. This does not get away from the fact that he must still be a doctor. Occasionally one sees young medical officers who get so carried away by aviation that they tend to forget the essential fact that they are doctors and that their knowledge of aviation is only given to them by the Service to use in promoting the physical and mental efficiency and well-being of flying personnel.

The U.S. Navy has a very large Air Service, not really comparable to our Fleet Air Arm. As you know, the main function of the Fleet Air Arm is the operation of ship-based aircraft either from catapults or catapults. The U.S. Naval Air Service, however, has a much larger function, taking on many operations that in British practice are performed by the R.A.F. involving coastal defence, transport and air ambulances as well as the purely naval work in ships.

Accordingly, they pay quite a lot of attention to Aviation Medicine and have a very fine Aviation Medical School at Pensacola in Florida, where several of our medical officers have gone through the similar course. This course lasts twelve weeks and covers the general principles of Aviation Medicine and Physiology as well as a lot of instruction in cardiology, rhinology, ophthalmology and psychiatry. Personally, I thought that the course [illegible] had been curtailed by two or three weeks, and that a lot of the didactic instruction in general medical subjects might have been left out, as it covered ground that was already [illegible] by any reasonably educated doctor. It may well be, however, that the average American Reserve Medical Officer is so specialized when he enters the Service, that it is necessary to give him a brush up in general medicine before he becomes a Flight Surgeon.

Our medical officers always did well in the course, and I used to think that they were [illegible] of the other fellows, for they did not come in the first six out of an average of 40 or 50. Of course, [illegible] the others were usually specially picked and sent a few thousand miles to do the [illegible] naturally one would expect them to do better than the average American officer [illegible] in any way scientific.

After a certain time of the course, the top 40 per cent were taken for a further [illegible] instruction in aeronautical medicine. With frequent wind and bad weather this [illegible] very much. All our officers had this flying instruction, though when they [illegible] England it was necessary to give them a two-months conversion course with [illegible] R.A.F. in order to complete their flying training. I am sure that it is very desirable [illegible] proper medical officers should have their wings, as it must help them [illegible] and later the problem of the flier, though as I have mentioned before, it is more [illegible] still that they should be kept that they are doctors.

[illegible] be sure, it must not only have a thorough knowledge of medicine and the physiology [illegible] know all about the technical and mechanical side of the various devices [illegible] The pilot's is, of course, include oxygen equipment and [illegible] this business, and it seems to me that the American methods take [illegible] their development than is the case in our own Services.

[illegible] quantum between the biologist and the physicist has, of course, [illegible] Royal Air Force Medical Service, who have done magnificent work, it [illegible] and the Royal Navy has shown the same trend in the work of the Rorl [illegible] and Research Committee.

A [illegible] pointed out it is impossible to design a night fighter aircraft, or to employ it to [illegible] advantage without knowing something about the physiology and pathology of night [illegible]. A recent article in the *British Medical Journal* emphasized again that any machine or apparatus which is to be used by man or a man, whether in warfare or industrial pursuits, is a biological problem which is at least as important as the problems of cost and merchandise, and that therefore the applied physiologist must be consulted through the various stages of design and application. There is an old tag written years ago by a naval poet whose name I forget, who used to write jingly verses concerning the Royal Navy. I saw it recently in the mess at Admiralty House, Halifax, and thought at the time that it made a very appropriate motto or slogan for Personnel Research. The appositr lines are:

> Let the optimist inventor remember if he can
> Though the instrument be perfect there are limits to the man

Anyway, as far as the Flight Surgeon is concerned, it is that he must have in addition to a reasonable professional knowledge an extensive knowledge of the apparatus used in aviation. But though up till recently it has not been stressed, the same applies equally to the ordinary naval medical officer, as far as the environment and devices of warships are concerned. It is a question of whether the man should be made to fit the machine or the machine made to fit the man. As in our population, hybridization, the latter seems to be a more economic proposition. It is only reasonable that the doctor should not only know something about the machine, but have some say in its development.

In Aviation Medicine one saw this borne out particularly in oxygen equipment for altitude flying, where in the case of the U.S. Navy, the responsibilities for development, efficiency and use of this apparatus is mainly that of the Medical Department. This is only reasonable when one considers the various stages of development, of the original simple continuous flow oxygen system, then the demand oxygen system, and later pressure oxygen breathing for extreme altitudes, where it is necessary to deliver the oxygen under a positive pressure in order to raise the partial oxygen pressure in the alveoli. It is obvious that the physiologist and the doctor must have a very large say in such developments, though, as we all know, the operational side is the primary requirement. It is up to the Air Staff and the designers to say what they want, and the physiologists and doctors to say how it can be done with maximum human efficiency and saving of weight and volume.

In the U.S. Army Air Force we saw the further development of altitude flying in the form of pressure cabins in the Super Fortresses where the work of the doctors and physiologists was again of importance. Here, by means of a mechanical compressor, which compresses the air entering from outside, the pressure inside the cabin of the aircraft is raised so that when the plane is at an altitude of 30,000 feet the effective altitude is 8,000 feet and again when the plane is at 35,000 feet, he is at 10,200 feet.

In bombers, the pressure differential, or the difference between the pressure inside and outside the aircraft is kept at about 6 pounds per square inch, which is 6 pounds per square foot. This means of course that over 35,000 feet the aviator will have to use oxygen just the same but can use the regular demand supply, and does not require pressure breathing, in fact he is already in a cabin which is already pressurized. The difficulty is, of course, that the cabin may suddenly be depressurized by a hole made in the structure by enemy gunfire. It was once thought that this sudden loss of pressure or explosive decompression as it is called would have dangerous effects in the air. Many experiments were done on human beings and it was found actually that no harm resulted. It seems that you feel nothing beyond a rushing of air out of the chest through the mouth and nose and the ears clear automatically. Explosive decompression will be very dangerous at altitude, of course, if oxygen were not at hand and used within ten or twenty seconds and so it is necessary to have oxygen equipment immediately available.

Another field in which the doctors have worked extensively has been in studying and developing methods of counteracting the effects of centrifugal force or G. As you know when you are sitting on the ground, or in an aircraft flying a straight and level course, a force of 1 G is working on you (representing acceleration due to gravity = 32 feet per sec. per sec.). If you were hanging from a horizontal bar by your feet with your head down, this would represent the sensation of minus 1 G.

This is used as a convenient measure of centrifugal force encountered in flying aircraft where when the plane is flying in a curved path in turning or pulling out of a dive, the individual is pushed down in his seat with varying force representing 1, 2, 3 or more Gs. In this event he weighs actually four or three times more the weight which he carries under ordinary conditions, and the strain on his supporting structures is astonishingly greater. The force of G here pulls the blood down into the legs and feet and makes it difficult for the heart to pump blood into the brain. At 3 G or so, depending on the individual, grey out develops with dizziness and loss of peripheral vision, and at 4 or 5 G black-out will occur with complete failure of vision, though the individual is still conscious. Higher it will cause unconsciousness.

If centrifugal force is developed in the opposite way, as in an outside loop, negative G will develop with an excess of blood in the eyes and brain. This produces a throbbing head with red vision, called red out. Minus or negative G may leave an unpleasant headache and is not to be encouraged, as obviously serious and permanent damage may result.

In North America there are several large human centrifuges where it is possible to study the effects of these forces in a controlled manner. They are all under the control of medical officers. The first one was built in Toronto in 1940 for the R.C.A.F. where a lot of basic medical research is done. Wing Commander Franks developed the Franks flying suit which is a device to protect the aviator by encasing his legs and lower belly in a [illegible] when in flight. The higher the G against the more the water compressed the legs and so [illegible] the pressure on the circulatory system.

There are also similar large centrifuges at the Mayo Clinic and at the Aero Medical Laboratory of the Army Air Forces at Wright Field, Ohio. The U.S. Navy has [illegible] at the Aviation Medical School at Pensacola. I understand that the Royal Air Force are at present fitting the first large centrifuge for use in this country at the [illegible] of Aviation Medicine at Farnborough.

The human centrifuge is placed in a circular compartment. The subject is strapped [illegible] in a light chair at the periphery of an arm 15 to 20 feet long. The chair swings [illegible] and rotation and it turns to the vertical at rest just like an ordinary [illegible] swing. An observer is in a chair near the centre of the [illegible] with him and of course when the apparatus is in motion moves concentrically [illegible] in a much smaller circle.

The [illegible] of the centrifuge are controlled by an operator in an observation post [illegible] or in an observation post just outside with a window [illegible] by various devices produce any amount of G up to 10 very [illegible] reached at the rate of less than 1 G per second and there are [illegible] either the operator or the observer to stop the movement [illegible] almost instantaneously. The period of time in which the subject was [illegible] in different laboratories from 5 seconds at Wright Field to a standard [illegible] minutes.

The [illegible] on human subjects were very complete with records of pulse [illegible] electrocardiograph being taken throughout the run. There is also a record [illegible] taken by means of photo electric device fitted to the lobe [illegible] the transluminency of the lobe of the ear which represents the [illegible] in the area corresponding to the blood in the cerebral vessels at a similar [illegible] with rising G the blood drained out of the lobe of the ear and the [illegible]

[illegible] of the subject was a panel which had a central light directly in the [illegible] the subject was told to concentrate during the run. There were [illegible] at a point 12½ degrees off the fixation point. These lights were operated [illegible] kept dim switched on the subject having switches to switch them [illegible] he would fail to do if his vision peripheral or central [illegible] failed.

[illegible] it was possible to get very exact figures recording the onset of the [illegible] fixation, dimming of vision being first sustained, then at slightly [illegible] peripheral vision as shown by inability to respond to the peri[illegible] which in fixation failure to respond to the central light appeared [illegible] at still higher rates consciousness was lost. As a result of this [illegible] have been developed these involving the use of pressurized [illegible] with increased G recorded by an accelerometer pressurized [illegible] into the aviator's suit thus pressing on the abdomen and legs [illegible]

We have also done some work on which the top of the skull had been removed and a transparent plastic calvarium having replaced the original bone making it possible to observe the brain and its circulation. By means of a camera attached to the centrifuge it was possible to take pictures of the brain in motion throughout a run on the centrifuge.

I seem to have devoted a lot of time to Aviation Medicine but actually it might have been more appropriate for me to have devoted the whole time that I have to this subject. It has always seemed to me that the Royal Flight Surgeons are much more often alive to such personnel problems as I have in mind than the ordinary naval officers. This may be due to the fact that they are in a branch of something relatively new where new discoveries and observations are always possible. It may be that the naval officer is by tradition and

[illegible] After all the Royal [illegible] Nelson or a Mulhouse [illegible] the American Air Force [illegible] connection with the explosive [illegible] the battle of Britain

In spite of the [illegible] on which they have [illegible] in recent years the American [illegible] has a most refreshing [illegible] and a large amount of their [illegible] fully into problems [illegible] of the sea or land [illegible] Here I might mention [illegible] dress and clothing

In night [illegible] the important work has done this [illegible] prolonged exposure to sunlight causes an appreciable loss of dark adaptation [illegible] man for a long period of time after return to normal conditions The U S Navy [illegible] important work in this respect showing actually that there are [illegible] shifts of dark adaptation and that individuals during the winter [illegible] Britishers have better night vision than those similar group in the summer or in southern latitudes In this respect the investigation but possibly rather far fetched suggestion [illegible] that one of the reasons for the supposed short twilight in the tropics is a shift in the sensitivity of the retina giving to prolonged exposure These observations of course are of tremendous importance in the case of the eyes of individuals on board ship who may be used to night looking According to the Americans their eyes should be protected by sun glasses from excessive glare during the day

Another interesting point is the role of the doctor in preventing injuries from aircraft crashes You might think that hitherto much a doctor's mind was directed towards prevention rather than curative medicine there would not be much he could do to prevent death or serious injury in an air accident

A year or two back I attended a conference at the National Research Council in Washington on crash injuries where there were a number of executive officers aircraft designers and doctors A medical officer from Pensacola showed a series of a hundred or so most gruesome pictures on the screen of individuals with the tops of their skulls knocked in or their faces completely pulped He pointed out that these fatal injuries incurred in crash landings were usually curable local and were due to faulty design When motion of the aircraft suddenly stopped on hitting the ground the individual though restrained by shoulder harness went forward a foot or so and hit some projection that was conveniently in the way to contact his head In fact it was said that there was a definite pattern of injury for certain types of aircraft In this way an campaign was started by the Committee on Aviation Medicine National Research Council for as they called it cleaning up the cockpit

I think that it is about time for me to say something about ships which after all is one of the main considerations of the Navy Some of you are no doubt familiar with the ships of the U S Navy and I think it was Surgeon Captain Critchley who several years ago commented on their austerity The American battleship mess room to me looks cheerless and uncomfortable and certainly has not got the homely appearance of one of our messes It may be that the Americans are much more conscious of fire hazards and perhaps unnecessarily remove every vestige of homely comfort in case of its representing a fire risk

Size for size the complements of American ships are on the average 20 to 25 per cent larger than ours making them as you may well imagine rather crowded With modern devices to be operated the additional complement can well be used There are at the same time some striking differences in living arrangements on board which help the men to exist without too much discomfort The cafeteria system is universal with a long chow line of hundreds and hundreds of men being given their dinner on an embossed tray with spaces for meat vegetable soup sweet as they pass along the line This of course requires perfect organization in serving otherwise there would be serious hold ups It has the disadvantage of losing the comradeship and friendliness of our system of small messes where a man may sit down with his own messmates instead of being lost as a single entity among thousands in a large dining hall The Americans say on the other hand that a man should be part of the ship and not part of a small mess

Again three or four tier systems of berths made of aluminium and canvas are provided in place of hammocks These berths are permanent but each can be folded vertically

during the day and they [illegible] take up too much room. The great advantage of [illegible] is that space can be saved by the hanging and that more men can be put into a given compartment.

Some amenities are provided to make up for general overcrowding and discomfort probably most important of all being laundries, tailors' shops and boot repairing facilities all of which are operated as part of the ship's services by whole time ratings. It is recognized that the ordinary rating on board ship has a whole time job and that he should not be expected to do his own washing or tailoring. Arrangements for supplies of ice cream, cold drinks and stories are as you might expect, on a more lavish scale than in the Royal Navy.

Air conditioning of spaces has been gradually introduced during the past few years first of all being placed in compartments of great operational importance where cooling is considered essential for efficient performance of control functions in battle such as Damage Control, Plotting Room, Aviators' Ready Rooms and Combat Information Centre. Later it was placed in Shell Handling rooms and Sick Bay. Steps are now being taken to provide air conditioning for some of the berthing spaces as it is believed that under tropical conditions all a man can be kept at an environment not above 78° effective temperature while sleeping, when he will not sweat, he will give more efficient performance during the day.

Two other differences between our Navies are the absence of baths and the absence of [illegible]. The shower is used on board by everyone and I have no doubt that there is a marked saving of water through this and I think that it is probably easier to keep clean in the tropics in this way. I realize of course that many of our officers would sadly miss the sedative [illegible] temperature and comforting environment of a hot bath. The only liquor carried on [illegible] U.S. ships is a certain amount of whisky in the charge of the medical officer who is [illegible] responsible for its issue in case of need. I should imagine that the responsibility [illegible] heavy.

The first U.S. Navy Hospital ships of the Haven class have to be seen to be believed. [illegible] of these commissioned during the last year of 15,000 tons displacement 174 [illegible] accommodating 800 to 1200 patients. They carry 19 medical officers, 32 [illegible] 1240 hospital company or Sick Berth ratings. The whole space for personnel is [illegible] with 11 to 14 feet in a room between decks. Comfortable graded stairways [illegible] elevators for running patients or staff up or down are provided. There is about [illegible] floor space for medical stores enabling these ships to supply nursing units on [illegible] as required.

[illegible] U.S. Hospital Ship is commissioned as a ship of the U.S. Navy and is such is [illegible] an executive officer who is normally in complete charge. The position was [illegible] that of the Royal Navy until about 1920 when owing to some senior [illegible] at that time on stepping the mark in matters concerning the safety of the [illegible] ship, it is made and hospital ships came under executive charge.

[illegible] crew comprises 17 officers and 270 crew apart altogether from medical [illegible]. At first it comes strange to us to see a hospital ship in charge of an executive [illegible] officer. I found that the system worked very well given a certain amount of [illegible] at least within. There was the advantage that with the large naval crew [illegible] prisoners. There was always plenty of man power available for [illegible] boats which is rather different from the anomalous position [illegible] furnished from Merchant Navy or Royal Fleet Auxiliary. However [illegible] land no doubt as I am certainly not suggesting that our hospital ships [illegible] should be under the control of an executive officer.

The American navy as a whole has a cautious and enquiring mind and it is only natural that [illegible] investigations should be going on continuously on such diverse problems as the use [illegible] and body armour for naval troops, seasickness preventives for those who [illegible] methods of manufacturing water for survivors at sea and the effects of blast [illegible] in or water.

[illegible] of benzedrine a few hundred Marines would be kept going for seventy two hours or so with large numbers receiving the drug and with others as controls receiving a placebo, the efficiency being judged by the results of firing on targets. It seemed here that benzedrine does have some useful effect and the individuals who took the placebo soon realized that it wasn't helping them very much. The results however were not very clear cut. The U.S. Marines are pretty tough and of very high morale and I thought that this

[illegible] receiving benzedrine [illegible] difference [illegible] caps It may be that in [illegible] strychnine and [illegible] hair cut

With [illegible] landing forces trials would be arranged [illegible] men on landing [illegible] receiving the drugs others placebo with [illegible] the effects Often [illegible] satisfactory as either the seasick [illegible] observers [illegible] in the whole that the simplest and [illegible] hyoscine 6 mg

As far as seasickness [illegible] I have to remember that the problem [illegible] of curing seasickness [illegible] a fighting man [illegible] in this case was landing [illegible] coast and getting on with [illegible] It was in fact rather [illegible] preventing seasickness in [illegible] the channel Hyoscine certainly [illegible] such as slipping [illegible] or two back giving an [illegible] hyoscine which he certainly [illegible] To make certain I gave him [illegible] and certainly succeeded in [illegible] though he was seeing double [illegible]

Actually a pneumatic [illegible] quite a lot [illegible] happy [illegible] were made in 1943 about 30 [illegible] where [illegible] water some operated by hand some by the sun some with the [illegible] vacuum pump and other chemical [illegible] pneumatic life rafts These floats [illegible] occupants were all violently sick After that [illegible] Naval Aviators Emergency and First Aid Supplies [illegible]

The solar stills which I have mentioned were [illegible] to the wear and tear which is the common lot [illegible] for a long time before the crisis comes when [illegible] who was proud of this example of American ingenuity [illegible] him that as mentioned by Surgeon Captain [illegible] Dr James Lind in 1762

Quite a lot of work was done on methods of preventing flashburn [illegible] body armour Extensive trials were done with several hundred [illegible] applications on animals and later on human [illegible] which produced a most realistic flash direct from a small [illegible] of this the U S Navy Flash Burn Prevention Ointment was developed [illegible] and was later taken up by the U S Army Forces by the tank personnel [illegible] titanium oxide and shellac and after application forms a dry [illegible] skin This is to be used in action for contrails the face or arms or parts of the [illegible] which are exposed or which it is not easy [illegible] other means [illegible] I think that it is rather messy particularly and [illegible] that it is worth mentioning as an example of American ingenuity

In the same way body armour was developed for use by the U S Marines who were in some of the bloodiest warfare last year in the islands held by the Japanese The armour consists of alternate layers of glass cloth and plastic [illegible] cloth being [illegible] of glass in which the primary fibres are 15 to 20 microns in the glass This material [illegible] with ½ in thickness and would stop Russian gun and 45 automatic pistol bullets more or less at the muzzle Pieces of the material were fitted into pockets or slots cut in the standard marine jackets the whole weighing about 3 lb and I was present at some climatic trials where the wearer was shot at and hit with no harmful results This jacket was [illegible] been used in the field later this year but as far as I know the war was over before an opportunity came

A rather interesting large scale epidemiological investigation was done during the winter months of 1943 44 in the control of upper respiratory infections at U S Naval Training Stations Owing to the sudden increase in the size of the Navy these Training Stations were really immense There were actually eight very large general training establishments each having from 30 000 to 50 000 men under training The possibilities of upper respiratory infection including tonsillitis and C S M were tremendous in such sudden crowding together of thousands of unseeded men It is then that the peak of sickness from respiratory infections occurs in these individuals about the third week of training

After some [illegible] a routine was introduced giving each man 1 gram of sulphadiazine [illegible] during his course at the Training Station which took eight to ten weeks. In the results were striking and as compared with a certain number of controls [illegible] most significant. In this time 500 000 men received the prophylaxis and it was [illegible] that during the winter months about 700 000 days sickness had been saved [illegible] during the maintenance of a 500 600 bed hospital at each of the big Training Stations. There was no doubt expected in the early stages several cases of agranulocytosis [illegible] osteomyelitis or dermatitis the trouble being that occasionally a man might suffer from [illegible] there to be sent to another hospital which not realizing that the man had taken sulphadiazine and that probably this was the cause of his symptoms would give him [illegible] with indeterminate results.

It did seem [illegible] that there was at first a striking reduction in upper respiratory infections and [illegible] But later trouble began to appear with the development of sulpharesistant [illegible] that were not affected by the sulphadiazine and in certain establishments [illegible] and rheumatism appeared in alarming numbers. The question [illegible] whether these resistant strains were actually induced by chemotherapeutic [illegible] or whether they were introduced by men drafted from elsewhere [illegible] they had appeared spontaneously as mutants. No answer was really found to this [illegible] question and it seems that all opinions may have to be revised on the epidemiology of the hemolytic streptococcus and ways found for measuring the organism's communicability. This is probably the most important factor in the genesis and perpetuation of streptococcal outbreaks and at present is a variable about which nothing is known.

In the more general field it was fortunate enough to see the development of penicillin in the States. It was received at first with a certain amount of scepticism but before long the big drug houses had got [illegible] and by deep culture in large 3 000 or 5 000 gallon vats were able to produce thousands and thousands of megaunits. As often happens the idea was British but the Americans were able to get gigantic production within a relatively short time.

I was present at a meeting of the National Research Council in Washington in 1943 when Dr. Mahoney of Staten Island Hospital New York first described the use of penicillin in syphilis. He had discovered that penicillin acted on spirochaetes in rabbits so tried it on the first few human subjects with primary syphilis using an experimental dose of 1 200 000 Oxford units given intramuscularly over eight days. The sores cleared up spirochaetes disappeared and the individuals became seronegative within four or five weeks. He then reported his discovery which was received with amazement or almost disbelief. It seemed so unlikely that one substance would cure conditions so different as syphilis and gonorrhoea. It was decided then that further investigations should be done and the matter treated as confidential as it was believed that there would be some danger if it were prematurely broadcast that a new cure for syphilis had been found.

Several projects were then started under the control of the National Research Council for the evaluation of penicillin in syphilis. Several hundreds of cases of primary syphilis were treated using varying doses over varying periods. It became obvious that total doses under the original Mahoney figure of 1 200 000 units were useless and that this should be spread over a period of about eight days. It might have been desirable in normal times to have continued these confidential trials for several years before recommending penicillin for general use in syphilis. The needs of the Armed Forces however were so urgent that it was decided to use penicillin generally in the Army and Navy in a total dose of 2 400 000 units over 7½ days which as you know is now the standard treatment in the Royal Navy. Since then we realize some of the limitations of penicillin and that it does not always work. It certainly is not as some of the more colonial articles in the lay press would suggest a cure all.

Actually the original laboratory workers in the United Kingdom had discovered most of the essential facts regarding susceptible organisms and dosage long before penicillin was used on a single patient. Mahoney's observations on the spirochaticidal effect of penicillin was the first important new discovery that had not already been foreseen a year or two previously. It is obvious of course that someone was bound to try penicillin on the spirochaete sooner or later.

I cannot finish this [illegible] without saying a word about the work which is going on in Canada where very able [illegible] workers in the R.C.N. and R.C.A.F. are dealing with many diverse problems such as clothing, selection of radio operators and [illegible] rations, visual problems and [illegible] noise levels in M.T.B.'s on the [illegible]. I have already mentioned the pioneer work [illegible] in connection with the human centrifuge [illegible] its high centrifugal force in the [illegible].

In the winter of 1943-44 extensive cold weather clothing trials were carried out in minesweepers operating off Halifax. About 180 different articles of equipment were taken from the Royal Navy, R.C.N., U.S. Navy, the Army and R.C.A.F. including outer clothing, wet weather clothing, mitts and gloves, headgear, footgear and [illegible]. A small team of observers received a two week course at Toronto University covering a variety of subjects in connection with cold weather, [illegible] with lectures and demonstrations on everything from meteorology, textiles, fabrics, leather and rubber to photography and methods of questioning subjects.

I spent a short time in one of the minesweepers where it was certainly very cold and very rough. The various items of equipment were issued to hundreds of men in the different ships and were observed as regards comfort, utility and wear. It seemed to me that the tests were extremely well organized and [illegible] and the final report illustrated by many photographs was of great use in the further development of cold weather clothing for the Navy. It is certainly better to choose clothing in this way by scientific trial than by a haphazard selection in an office in London.

I am afraid that I have taken [illegible] talking of a very small amount of the work that is going on in North America. It is not possible to cover many such sections as this but I hope I have said enough to give you some picture of the tremendous possibilities of Service Medicine for research which is not only of importance for the health, efficiency and well-being of the Navy but can be applied to more general use.

The young doctor who enters the Service straight from a hospital job at his training hospital where he has treated many men and seen many [illegible] in bed when he goes to his first ship. He finds that the sick are relatively few in number and that opportunities for the higher practice of medicine are rare. A walk in the smallest ship there are an infinite number of opportunities for personal research with the aim of fitting the fighting man to his environment and when necessary, alternately, his environment in order to prevent it having an adverse effect on his efficiency.

THE HEALTH OF THE WOMEN'S ROYAL NAVAL SERVICE

By Surgeon Lieutenant Commander A. G. Rewcastle, *O.B.E.*, R.N.V.R.

At a time when we are much preoccupied with the prospect of a State Medical Service it may be of interest to reflect on the Navy's experience in regard to the medical care of some 70,000 women in an auxiliary service in time of war.

The responsibility for the medical arrangements for all naval personnel has of course rested with the Medical Director-General of the Navy, and it is significant now that the war is over and that we are being asked to direct our minds to civilian needs on a vast organized scale, that the traditions and practice of the Royal Naval Medical Service, its knowing much to naval traditions generally, fitted it without any difficulty for the immediate and intelligent management of an element of society hitherto almost wholly outside its sphere of influence. The ideal of the Naval Medical Service and the aim which it has consistently set itself has been to regard each patient not as a case or as a textbook illustration but as a whole person filling a place in and owing a duty to society. From this it follows that Preventive Medicine or Social Medicine as it is now more fashionably called has always engaged the attention of naval medical officers and by its results has done much to establish the settled policy of the Admiralty in regard to hours and conditions of work, welfare and accommodation, exercise and recreation and indeed every aspect of a serving man's life.

Very little is heard of the Naval Medical Service largely because it functions well and largely because the Navy prefers to remain silent. It is worth remembering that the things which prove really useful are rarely those which provoke much comment for the simple and obvious reason that by their usefulness they have become part of the common life.

It was appreciated at the outset that women were not likely to adapt themselves to the life in the same ways as men and that any attempt to fit the women to the organization have been doomed to failure women being by nature so individual and so unpredictable in their reactions It has seen that the two biggest problems we should have to deal with would be enthusiasm and boredom These states of mind are not unknown in men but their solution in the case of men presents a small problem as compared with that of women However much may be said on the subject of equality of the sexes it is incontestable that there are certain fundamental psychological differences and that the management of women through their periods of intense enthusiasm and unutterable boredom calls for the highest skill and the most profound human understanding if serious repercussions on health and efficiency are to be avoided

The overwhelming majority of the women who joined the W R N S were from the start enthusiasts for the Navy The rush of applicants being so great it was possible to enforce a policy of rigid selection from the medical as well as from other standpoints and every effort was made during medical examination for entry to assess not only these women's physical fitness but their suitability for the categories in which it was proposed to employ them and the likelihood of their sound adjustment to Service life Without this careful assessment by the medical officers the mere selection of a woman on the basis of some educational or technical qualification would have placed many square pegs in round holes A knowledge of languages or a degree in mathematics was not in itself sufficient to ensure that a woman would be able to carry out duties of a monotonous and sometimes apparently meaningless nature unless she had the physical and mental capacity essential for such an occupation The necessity for secrecy in certain categories was apt to give rise to anxiety symptoms in intelligent but highly strung young women The watch system designed primarily for ships at sea needed considerable modification in the case of women employed on shore. The night watches proved in some categories to throw an unduly great strain on the physique of the girls who worked them but the initial plan of assessing each case on its merits soon revealed that the Wrens who worked on night watch were either those who failed to take adequate rest on the day immediately following or those who were employed on an immobile basis and who on returning to their homes were always faced with the burden of domestic duties

In certain categories requiring a high degree of concentration and accuracy a thirty-six or forty eight hour stand off was always allowed after the night watch and considerable tact and ingenuity had to be exercised by the medical officers to persuade these girls not to rush straight off to London and elsewhere some to their homes long distances away without unduly interfering with the *joie de vivre* normal to their age The boundary line between supervision and interference is a very narrow one and remembering that the girls were probably spending the best years of their lives in the service of their country their right to use their off-duty time as they chose was carefully borne in mind

It was put forward for consideration by some medical officers that a longer period of night duty similar to that adopted for nurses might be physiologically more sound but after careful consideration it was agreed that an enforced long period on night duty in a Service in time of war was not strictly comparable with a hospital nurse's night duty and that psychological damage might far outweigh any physiological gain I may say it was also fully appreciated that the average girl would resist such a measure to the utmost and on the principle firmly maintained in the Women's Naval Service that the only true discipline comes from within the responsibility for avoiding ill health and inefficiency in this respect was with a very great measure of success placed on the women themselves

Before any comment can be made on the incidence and type of sickness in the Service it has to be remembered that the W R N S was primarily a body of healthy women comfortably and hygienically accommodated well fed and clothed and provided with all the amenities which careful thought and good management could devise We were never faced with the problem of hardening up or making fit poorer types and the whole of our effort was directed towards the prevention of disease in a sound community

It is not surprising therefore that the general standard of health has remained at a uniformly high level making due allowance for the seasonal incidence of the commonest infectious diseases and minor ailments both at home and abroad

A careful perusal of Medical Officers' Reports and Quarterly Journals provides evidence

of this fact. In 1941/42 the Medical Officer in Charge W.R.N.S. [illegible] in an establishment on the South Coast observed that the incident of sickness among cooks notably bronchitis was relatively much higher than among other categories. This he attributed to the fact that working hours began at 6.30 a.m. on alternate days and also to the sudden changes of temperature from the hot galley to the cold air outside coupled with a journey of [illegible] miles by ordinary Service transport in the winter months. I do not suggest that the mere fact of travelling to and from work is in itself a contributory factor in the incidence of sickness. Many observers have found the contrary to be true but I am in agreement with his conclusion that in this particular category involving sudden changes of temperature and the risk of rapid cooling off the journey in the winter months was most probably a contributory factor.

He plotted a graph showing that the sickness rate among cooks dropped steadily as the weather improved and that the percentage in the succeeding winter months was considerably

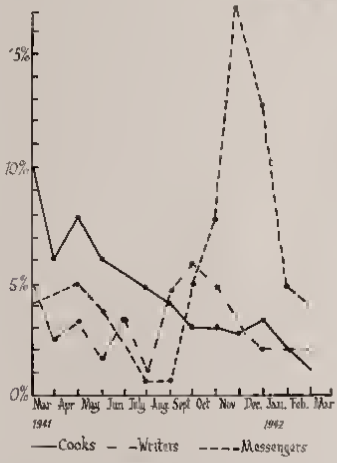

CHART SHOWING THE PERCENTAGE AMOUNT OF SICKNESS EXPRESSED AT MONTHLY INTERVALS OF THE CATEGORIES OF WRENS. COOKS, WRITERS AND MESSENGERS

lower than it had been in the corresponding period of the previous year. This improvement he attributed in large measure to the fact that the journey to and from the quarters to the Camp had been rendered unnecessary by the provision of accommodation within the camp for the Wrens in question but a very considerable factor in the improvement of health was that the girls had by now settled down to the routine of Service life.

In the same graph he showed the sickness curve among two other categories—writers and messengers—and his observations are of interest insofar as both these categories worked ordinary office hours, the one indoor and sedentary, the other outdoor and active. The writers ran a curve of sickness such as one might expect of the office worker—low in the

summer months and slightly higher in the winter months, with perhaps the common cold in October causing an epidemic in a large office. The messengers on the other hand, who spent their working hours cycling from one department to another in a widespread establishment and were therefore continually exposed to the weather, showed the lowest percentage of sickness in the summer months and by far the highest in the winter months. That was an interesting observation and does not conform to the popular conception that outdoor occupation is the healthier. He found that the sickness rates among all indoor categories ran almost parallel with those of writers, and as these indoor categories included stewards, many of whom were in that particular establishment immobile above the average age and in most cases endeavouring to run a household at the same time, he drew the interesting conclusion that there was no appreciable difference in the amount of sickness between mobile and immobile Wrens. This is not borne out by other observers who have found particularly as the war progressed, that the additional strain of domestic duties and family responsibilities produced in many cases physical and mental exhaustion. It is difficult to say whether these divergent observations prove very much either way, remembering the importance of the personal equation in matters feminine.

In 1944 Surgeon Commander K. Forsyth, R.N.V.R., medical officer at a bleak northerly air station in the United Kingdom remarked more fully on the high incidence of sickness among cooks and produced a table (see Appendix I attached) to show the relative sickness rates in different categories. It will be observed from this table that the sick list rate for cooks was approximately five times that for writers and six times that for mechanics. The minor illness rate was seventeen times greater than that for writers and four times that for mechanics. Minor injury rates for cooks and mechanics were approximately equal.

Remarking on the causes of this wide variation in the sick list rates, he gave it as his opinion that the hours worked by the cooks were primarily responsible for their higher rate—the three watch system allowing insufficient time for rest and relaxation. His recommendations that the complement of cooks should be increased and that a four watch system should be instituted were unfortunately impracticable at that time—the shortage of cooks being so great and the practice of night flying, on the station necessitating twenty four hour service in the galley.

Surgeon Lieutenant Ailsa M. Whitehouse, R.N.V.R., a medical officer in the Middle East reporting in 1945 on the incidence of sickness and the causes thereof, while laying emphasis on the fact that accommodation was sumptuous rather than merely adequate, that working conditions were excellent and that every preventive measure was strictly enforced, remarked that infectious diseases accounted for the greatest amount of time lost. This medical officer's remarks support so strongly the views that I have consistently expressed in regard to the employment of Wrens on tropical and subtropical stations that I venture to quote them:—

> "A very small number of the Wrens are commencing, then, that year in the Middle East, although many are partially broken in, leaving a number who are undoubtedly feeling the effects of climate.
>
> "An illness very important in this rather hot climate is the malaria, which many Wrens feel. It is [illegible] that in the cantonments there is no malaria, but the effects begin to tell after a year.
>
> "The application of watchkeepers than lay workers who are only allowed one late pass a week. It is very difficult for the Quarters Officer to make sure the watch keepers get enough sleep. The general medical opinion does not agree [illegible] that watch keeping *per se* is injurious [illegible] of W.R.N.S."

General Discussion.—The incidence of gynecological disease has been very low, not unlikely so in view of the high standard of fitness. The total number of cases referred to gynecological consultants has been 719, but it would be incorrect to assume that all of these cases had major disease requiring special investigation and treatment. Indeed [illegible] it must be that consultants were used more frequently than the gravity of the symptoms merited, but in recognition of the physiological and psychological [illegible] of even minor gynecological disease, it was considered proper that early special [illegible] should be sought when doubt existed as to the causation of symptoms or the [illegible] diagnosis. The frequent use of civilian consultants may bear some relation to the fact that the Royal Navy has not as yet recognized gynecology as a specialty, the care of women in normal health being outside its sphere. I am bound to concede that the smallness of the W.R.N.S. and the low incidence of gynecological disease rendered such a specialty within the Service unnecessary in view of the fact that civilian consultants were always available for consultation and treatment.

We have [illegible] as w[illegible] expected [illegible] menstrual irregularities [illegible] majority [illegible] observation resolved themselves [illegible] treated and followed up [illegible] menstrual irregularity would [illegible] many Wrens actively engaged in [illegible] their family doctors on leave [illegible] Instructions regarding the difficulty [illegible] to be the most natural thing in the world [illegible] mother some temporary disturbance [illegible] insist on her seeing [illegible] being the mother of three [illegible] exaggeration of anxiety [illegible]

Were the total percentages available [illegible] the secretion of any The whole machine, in [illegible] as a normal physiological process and should in no way interfere with [illegible] duties [illegible] girl at duty during a temporary menstrual [illegible] must surely do more to promote [illegible] on the discipline. In our experience persistent cases [illegible] have been met with reported without recourse to frequent and [illegible] menstrual function Apart from routine [illegible] medical examination of Wrens and the more frequent [illegible] medical officers for [illegible] Wrens have provided opportunities for [illegible] and without embarrassment any menstrual irregularities regarding which [illegible] unduly concerned

Foot Troubles —Foot troubles were [illegible] in the early years of war particularly in the domestic categories but the right [illegible] with deformed and painful feet rendered this problem a comparatively [illegible] The provision of a well fitting Service shoe did much to promote comfort [illegible] I would here again emphasize a point I made in an earlier paper [2] the [illegible] change over from an average high heeled shoe to a Service shoe [illegible] irritable discomfort I have the support of Surgeon Rear Admiral M [illegible] Consultant Orthopaedist to the Royal Navy in saying that there are sound objections to the compulsory wearing of a low heeled shoe by women whose habit of life has accustomed them to high heels observing that the well made high heeled shoe is so constructed as to distribute the body weight more evenly and more comfortably Unless and until this type of shoe is generally available at a reasonable price the low heeled Service type of shoe is preferable in all respects to the inferior and cheaper types which are responsible for so much deformity and so much bad deportment in women

Medical officers have constantly directed the attention of P.T. officers to the harmful effects of too much squad drill (square bashing) in the case of women and have played their part in promoting remedial work and the encouragement of training classes as a healthy and pleasant form of physical training The care of the feet forms part of the routine lecture in hygiene which is given by medical officers in the Navy Army Depots and special attention is also directed to the importance of well fitting stockings

Verminous —The problem of vermin has troubled us highly In the early years of war pediculosis was practically unknown because of the care that was taken to reject applicants who were found to be verminous and to deter the acceptance of those who even apparently accidentally infested until thorough cleansing had been effected Regular clothing inspections by the nursing staff were instituted by order in 1941 and it was not until the greater need for recruits and the compulsory acceptance of those directed into the Services under the National Service Acts produced an appreciable increase in the problem that this problem demanded urgent attention The research Bureau at the London School of Hygiene and Tropical Medicine and the large scale experiments carried out by the Ministry of Health and the other Women's Services having demonstrated the efficacy of medicated hair oil (Lethane Special 387) this insecticide was adopted for general use and has proved highly efficient

Venereal Disease —Venereal disease has presented no problem The incidence has been

[illegible] small in [illegible] as was to be expected in a carefully selected [illegible] provided with every [illegible] opportunity for normal social intercourse and every inducement to higher education and self improvement.

Pregnancy.—To this subject I shall only make passing reference, as it is hoped to carry out a more thorough investigation. It should, however, be placed on record that the incidence of illegitimate pregnancies has been low, but this is not surprising, as the remarks in regard to venereal disease apply equally well here.

Tuberculosis.—With regard to major sickness we have been fortunate. Great anxiety was naturally felt in regard to a possible high incidence of pulmonary tuberculosis. The institution of mass miniature fluorography provided a means for early diagnosis and brought forward an interesting data. Among other things it revealed the fact that at all ages the prevalence of adult type pulmonary tuberculosis judged radiologically was lower than the corresponding level in males. Out of a total of 42,437 Wrens the number found on first fluorography to have radiological evidence of pulmonary tuberculosis was 346, giving a ratio of 8.2 per thousand examined. Out of a total repeat fluorography of 9,144 Wrens after an interval of approximately eighteen months, 26 were found to have evidence of pulmonary tuberculosis, giving a ratio of 2.8 per thousand. The invaliding rate in the first group was 1.2 per thousand, and in the second group 1.9 per thousand.

It is interesting to remark that in the R.A.F. the reverse picture presented itself. The results in the W.R.N.S. and W.A.A.F. are closely comparable, and the essential difference therein is that the prevalence of pulmonary tuberculosis in male members of the Royal Navy is much higher than that in the R.A.F. A higher incidence of pulmonary tuberculosis has always been associated with sea service, and this factor is most probably responsible for the notably higher rate among males in the Navy.

An analysis prepared in the Medical Department [4] of invaliding due to disease revealed that the total invaliding rate for women fell sharply from 1941 to 1942, and that there was practically no difference between 1942 and 1943. The numbers borne, especially in 1941, were small, so that hardly any of the differences in the rates for individual disease groups are significant. A comparison of men and women invalidings due to disease (officers excluded) in the three years 1941 to 1943 showed a significantly higher rate for men in pulmonary tuberculosis, diseases of the eye, diseases of the ear, peptic ulcer and other diseases of the digestive system, whereas in women the rates were higher in mental diseases, circulatory diseases, and non-pulmonary tuberculosis.

The most striking difference was in peptic ulcer, with a rate 12 times greater in men than in women. I cannot accept in its entirety the suggestion put forward by some observers in the R.A.M.C. that this difference in rate is accounted for by the fact that while "nerves" is a respectable diagnosis in women, men are apt to convert a conflict into psychosomatic symptoms. The actual figures in the years 1941/43 in the Navy are for women in the mental diseases group 4.76 per thousand, and for men 3.75 per thousand, while in the peptic ulcer group the rates for women are 0.17 per thousand and for men 2.20 per thousand. The adding together of these two sets of figures for the two sexes does not show the same close approximation as was found in the Army, and I am of opinion that the retention of men in a lower medical category and in higher age groups is, at any rate in the Navy, responsible for the higher incidence of peptic ulcer in men. The Consultant in Medical Statistics to the Royal Navy points out that the greatest caution has to be exercised in comparing invaliding rates in the two sexes, because of the influences which tend to raise and to lower the female rates as compared with the male. First, women are much more highly selected than men. Secondly, they enjoy better conditions. Thirdly, they are far more readily invalided when sick. The first two factors must have notably lowered the rate, the third factor must have unduly increased it. The need for caution is emphasized by the death rates due to disease, which also provide an interesting comparison between the sexes. The crude rate (officers excluded) in the W.R.N.S. in the years 1941/43 was 0.55 and the age adjusted rate 0.63 per thousand strength, whereas the corresponding age adjusted rate in men for the same period was 1.05 per thousand strength. It will be noted that the three factors mentioned above, acting all operating, in the same direction, tend to lower the death rate. A table showing a comparison of invaliding rates due to disease of men and women for the period 1941/44, by age-groups, is shown in Appendix III, and from this table it will be seen

that gynæcological [illegible] is falling pregnancy but including instance [illegible] shell menopause was the primary [illegible] voluntary trivial as the cause of invalid[illegible] except in the overforties amongst wh[illegible] a serious source of wastage

Comment has been made [illegible] other Services on the higher rate of minor sickness in women than in men and surprise has been expressed that this should be [illegible] I venture to say that this phenomenon neither proves nor disproves anything at all It is true that in civil life there is a briefer first month complaint less of minor sickness and various suggestions have been put forward as to the reason In the reverse picture in the Services It is not really due to the fact that women in the Services are generally in more [illegible] report minor sickness (and perhaps it is for some of them a new experience to be able to [illegible] whereas men are not so encouraged? Is it not also true that the men and women in civil life are tempted to report sick when feeling dissatisfied discontented or bored or [illegible] in fine the weather ? The answer I suggest to the lower male rate may be found in the story of the small boy who having on his way from school fallen and cut his knee picked himself up bravely and limped home without a cry On being congratulated by his proud mother who had observed the incident from a window he naively answered I didn't know I was [illegible] looking so there was no use crying!" There is still something of the small boy in every man and the experienced sick berth petty officer or the busy medical officer cannot be said to provide a substitute for the wife or mother who ran almost always be relied upon to show concern and to give one a little extra attention for a couple of days

In a short paper such as this one cannot hope to do more than skim the surface of the mass of material available but so far I think it have demonstrated that the policy of the Admiralty in regard to selection and use of female personnel has paid handsome dividends A special word must however be said in regard to the psychiatric group of diseases They have produced by far the highest number of invalidings and this observation emphasizes the point I made earlier in regard to the fundamental psychological differences between the sexes While the actual number of psychotics requiring certification and mental hospital treatment has only been 38 a very large number of women in all age groups have been invalided for anxiety states and other neuropsychiatric conditions The causes of breakdown in these latter cases have been many and varied For example difficulty in adjustment to communal life constitutional inferiority expressing itself in self-consciousness hypersensitiveness and unsociability unwillingness to accept responsibility unsatisfied personal ambition broken love affairs separation from families anxiety for the safety of husbands brothers and fiancés serving in combat zones or for the welfare of children in the care of relatives or friends the dual responsibility of Service duties and household cares in the case of married Wrens It is in this group also that the extreme enthusiasm and the unutterable boredom already referred to played so big a part and I venture to say with all respect to those concerned that if certain contingencies foreseen by the Medical Branch of the Service had been better appreciated the invaliding rates in this group might have been cut by two thirds Many of the factors which precipitate nervous breakdown in women also occur in men That being so it has been more than a little difficult to persuade lay authority that man's gregariousness and his instinctive response to discipline do much to help him to overcome his symptoms and indeed to retard their development whereas woman intensely individual cannot be measured by any rule and in her case subtlety must be met by subtlety The intelligent zealous woman frequently an officer is apt to become obsessed with her work and with the responsibility which she is obliged to carry It is difficult to persuade her to take her mind off her job She never works badly and in consequence becomes irritable difficult to live with and to work with and eventually through sheer exhaustion inefficient

The young woman who marries a civilian husband and is refused her discharge on compassionate grounds to make a home for him becomes increasingly bored with the daily round of duties and her membership of the Service hitherto her greatest pride becomes a millstone round her neck

The selfish girl who joined the Service because she thought she was going to have a good time literally goes on strike when she finds there is a real job to be done and that she is expected to live in harmony with others

Many of the types that have cracked because of misguided enthusiasm have been cured and have succeeded in readjusting themselves on a more normal basis Indeed they

form a very small percentage of the breakdowns and those mostly in the [illegible] groups but the girls who are bored or dissatisfied or have gone on strike have always been in my view not a medical but an executive problem. I submit that in a Service where the supply has almost always exceeded the demand it is uneconomic from the Service point of view and unfair from the woman's point of view to endeavour to compel unwilling service. No amount of persuasion or argument or persuasion will make this type of woman do her work since her mind has been made up against it. I submit also that for authority so to place itself in the position of a woman is a direct and unfortunate encroachment to her to play the game I call it its truth. Such a policy is also damaging to the Service inasmuch as it lessens respect for authority and offers an easy and lucrative means of evasion of service. Many individual Women have absented themselves from duty, reported themselves as sick in error and so forth to test the patience and the ingenuity of the medical authorities in getting them back to duty as to fitness for service. The great majority were found on short to exhibit symptoms of hysteria or other minor neuro psychiatric disorders arising solely out of their repugnance to Service life and their unwillingness to return to duty.

I have no desire to enter into the controversy which has been agitating the pages of the medical press recently in regard to the management and disposal of neuro psychiatric cases but for some years I have taken the view that discharge to civil life without disciplinary action would have been the correct answer in many of these cases. Women have a genius for convincing theatrical of the justice of their case and while no benefit either to themselves or to the Service could possibly accrue from returning them to duty, had they been allowed to have their minds still in the hands subject to the direction of the Ministry of Labour and might have found themselves in employment which would have tested their adaptability more satisfactorily than the W.R.N.S. had done. The incidence of minor neuropsychiatric symptoms within the Service would I feel sure have shown a rapid decline. Invaliding in the other hand demanded protection from the immediate direction of the Ministry of Labour and this is fulfilled in favourment to the girl who wanted to get out of the Service the easy way.

From the foregoing, final summary, I think it will be seen that apart from the neuropsychiatric group of diseases very little emerged during the war that could be said to differ from the ordinary diseases common to civil life. The other Services will no doubt be able to present a much bigger array in view of the greater diversity of material at their disposal. But I venture to think we shall all agree that as regards health and efficiency the women in the Services have compared very favourably with men employed in similar occupations. Secondly, that owing to fundamental psychological differences they are not amenable to the same discipline of the same conditions of service as men. Thirdly, that to ensure their best effort in their work and their best health for the future they must be safeguarded from their enthusiasm. Fourthly, that once they lose interest in a job they cannot be compelled to carry on with it.

The experience gained by us medical officers during our period of service has been of the utmost value to us and should do much to fit us for our work in civilian life. Apropos of this perhaps I may venture a word on the subject of temporary medical officers. The Navy is a short service. For those of us who came to it straight from civil practice it has been a hard apprentice. I believe, however, that we shall leave it with a fuller and a clearer realization of the vocational nature of our work. As we try to steer a straight course through the troubled waters of reconstruction we may yet have reason to be grateful to the Service that broke us in and tried us, that melted down and re-cast and tested time and again the fabric, the quality, the spirit and the skill of each one of us until there was achieved that [illegible] of effort which expresses the spirit of the Royal Navy and which is the outcome of the enlightenment in the fulfilment of one's duty. It augurs well for the proposed State Medical System that we shall bring to our civilian practice this vocational spirit. Whether we are allowed to persevere and to bring it to perfection depends on the measure in which the State recognizes that the doctor too is a whole person filling a place in and owing a duty to society and that society owes him in turn a just and honourable reward for his services.

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REFERENCES

[illegible] 1944 30 104 2 [illegible] 1912 28 215
[illegible] 15 Restricted)

APPENDIX I

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	53	3 8	81 fax	70 per cent	1 [illegible]
Sick [illegible]	46	[illegible]	80 8 days	48	1 1
Writer	44	4 2	76 days	18	[illegible]
Mechanic	64	0 9	81 8 days	45	[illegible]

APPENDIX II

ROYAL NAVY [illegible] DUE TO DISEASE—ANNUAL RATES PER [illegible] RISON OF WOMEN AND MEN FOR PERIOD 1941 4 BY AGE GROUPS OFF [illegible] (Invalidings due to injury not included—rates for men adjusted in each [illegible] weights as for women to each year)

	Women			
	Gastro intestinal conditions	*Other diseases*	*All diseases*	[illegible]
19	0 1	8 1	8 4	[illegible]
20/24	0 5	11 2	11 7	[illegible]
25/29	0 6	13 2	13 8	[illegible]
30/34	0 9	15 1	16 0	[illegible]
35/39	1 7	18 3	20 0	23 1
40+	13 0	34 1	47 1	34 0

THE MALDIVE ISLANDS AND THEIR INHABITANTS

By Surgeon Lieutenant John M S Manson R N V R

Geography The Maldive Islands comprise a group of coral atolls and individual islands in the Indian Ocean situated some 400 miles to the South West of Ceylon They lie between 72° 33 and 73 44 East and 7° 6 North and 00° 42 South The most northerly island lies about 350 miles from Cape Comorin The seat of government of these islands is at Male (pronounced Malé) which is 415 miles from Colombo The entire group of islands may be divided unequally by a natural barrier—the one and a half degree channel—into northern and southern islands This channel is frequently used by ships in peacetime as a trade route The southern islands consist of Suvadiva Atoll Fua Mulaku Island and Addu Atoll (*see* figs 1 2 and 3)

History—The people of the Maldive Islands are of Arabic Indian and Ceylonese origin During the fifteenth century the spread of Islam reached the islands and with it came Arabs and Negro slaves For centuries Indian traders have visited the islands in their buggalows for commercial purposes During the Portuguese occupation of Ceylon many Sinhalese left and settled down in the Maldive Islands At the end of the fifteenth and beginning of the sixteenth centuries the Portuguese also occupied the Maldive Islands and even to day relics of that period can be seen In the mosques throughout the islands Portuguese swords are preserved which serve to remind the worshippers of the wrath of Allah should they deviate from his teachings

The first account of the Maldive Islands was written by a Frenchman named François Pyrard de Laval who was a survivor of the Barque *Corbin* wrecked on a reef in 1802 He spent the years 1602—1607 in the Maldive Islands Since then several other Europeans have visited the islands for variable periods and have published accounts of their experiences The most impressive features of these accounts are the lack of progress made by the Maldivians since the first one was written and an apparent inability to glean accurate information regarding the islands and their inhabitants

In 1887 an agreement was made between the British and Maldivian Governments whereby the Sultan of the Maldive Islands recognized for himself and his successors the suzerainty of

the Sovereign of Great Britain and he disclaimed all right or intention to enter into negotiations or treaty with any foreign state except through the rule of Ceylon The British Government agreed to protect the Maldive Islands from all foreign enemies and to abstain as far as possible from intervention in local affairs and disputes of the group of islands In effect the British Government agreed to allow Maldivians to progress or degenerate without interest being taken and to prevent any other nation who might colonize or civilize the islands and their inhabitants from doing so

[illegible]

[illegible]

[illegible]

[illegible] Aerial photographs [illegible]

Inhabitants — The people of the Maldive Islands [illegible] average stature Their physical appearance varies according to their [illegible] there are dark negroid faces sharp cut Arab features and Aryan casts probably [illegible] or Portuguese in origin They show strong affinity with Indians and Ceylonese with [illegible] they carry on trade

The approximate population of the Southern islands [illegible] 14 500 being distributed as follows Suvadiva Atoll 9 000 people Fua Mulaku 2 500 Addu Atoll 3 000 Information is not available as to whether these numbers are constant increasing or decreasing but the birth-rate appears to be astonishingly low The population is usually concentrated in one village on each island but on large islands more than one village may exist

[illegible] a close resemblance to Sinhalese and has [illegible] Hindustani and Sinhalese. Dialects exist throughout the islands [illegible] Atoll is almost unintelligible to people in Male and vice versa.

Culture.—The culture of the Maldivian people practically uniform throughout [illegible] of a composite origin, showing a marked Arabic element.

Domestic Life.—The common dwelling house is a humble structure of [illegible] coral stone. The roof is usually corrugated iron but the more impecunious [illegible] cadjan. Tiled roofs are seen but they can be afforded only by the wealthy [illegible] community. The houses are of one story and are built on a foundation of coral which [illegible] only a few inches above the ground (see figs. 4 and 5). The floor usually consists [illegible] sand which is removed and replaced at frequent intervals to maintain [illegible] arrangement of the rooms is simple. A verandah extending the [illegible] width of the house [illegible] as an entrance hall. The remainder of the house is usually divided into two [illegible] according to the size of the house the number of rooms varies.

House furnishings are very simple. One article constantly found is a swing [illegible] by cord ropes from the roof so that it may swing to and fro. This is usually [illegible] verandah but also may be seen in the houses. It was designed [illegible] fewer hours are spent by a person in [illegible] than on which is started [illegible]

Figs. 4 & 5.—Typical Maldivian dwelling houses.

[illegible] on legs which has a cross-cross [illegible] [illegible] The only pillow used is a cylindrical bolster. In most houses mats [illegible] over the bed. But the poorer people do without. Very poorly furnished [illegible] are seen which have been brought from Ceylon or India. The [illegible] with the wealth of the family.

All cooking is done outside the house, the fuel used being coconut husks. Dishes [illegible] coconut shells. Sugar is made [illegible]

Each house is separated from its neighbour by a cadjan or coral-stone wall. The ground surrounding the house is [illegible] a vegetable garden except where vegetables and fruit trees grow which produces a striking appearance of cleanliness. This coral gravel is replaced [illegible]

Beside each house there is at least one well. It is usual to find two wells—one for drinking and cooking purposes, the other for washing. These wells frequently contain larval [illegible] fish. The type found in Ari Atoll is Barbus.

Houses are built in parallel lines so that roads—seldom more than twenty feet wide are parallel or at right angles. The roads have a surface of coral sand and are kept clean and neat by the occupants of the houses.

Dress.—Women wear a waist cloth chocolate in colour with black and white horizontal stripes round the lower border called a *fathi*. A smock or chemise like garment reaching to the knees, chiefly dark blue or red with sleeves tight fitting at the wrists is worn over the *fathi*. The neck of this garment is not fairly low and is edged with gold or silver embroidery. A coloured handkerchief is frequently worn over the hair (see fig. 6).

One marital obligation of a husband is to provide six sets of clothing each year for each wife. Although four wives are permitted, monogamy is the rule. Purdah is not observed. The hair is brushed straight back and tied in a bun. In Fua Mulaku the bun is above the right ear, whereas elsewhere it is over the occiput. Flowers are frequently worn in the hair by girls. Many bangles are worn and better classes wear earrings, necklaces and other jewellery. Up to the age of 10 or 12 the dress is the same for girls and boys—a sarong.

The men wear sarongs of varied patterns with shorts underneath. Upper classes wear a shirt, coat, half blouse, half shirt, and a cotton singlet is usually worn underneath. Head-dress is very varied. Fishermen wear a scuttle shaped conical hat, other workers wear a short length of cloth round the head with the ends protruding, and the upper classes wear a beret type of cap. No ordinary Maldivian wears or is supposed to wear either sandals or shoes, nor can he carry an umbrella. These are prerogatives of royalty.

Social classes exist among the Maldivians, but there is no caste system. The name Didi is a title which indicates relationship with the royal family. It is hereditary and may be transmitted by either father or mother.

[illegible]

Fig. 6.—Maldivian inhabitants.

[illegible] the relatively poor quality of the soil, agriculture in the Maldives [illegible] coconuts, papaya, bananas and bread fruit are ubiquitous and [illegible]. Each householder in his own garden grows sweet potatoes or yams [illegible] and has a variable number of fruit trees. These are usually papaya and [illegible] usually pomegranates, lime trees and mango trees are seen. Fua Mulaku [illegible] large population because of its fertility. There oranges and pineapples [illegible] of inferior quality are grown.

Most [illegible] and eggs constitute part of the diet. The lack of agricultural resources [illegible] depend largely upon fishing for a livelihood. Fish are abundant and the [illegible] catching them. The commonest fish is tuna, and angling is the method employed [illegible] them. The hooks are bright metal of a curious shape and without a barb. [illegible] small fish with nets in the lagoons and these are kept alive in the boats, called [illegible] to be used as bait. Tuna fishing is done outside the atolls. The fishermen sail [illegible] an area where fish are suspected by the presence of sea birds circling round [illegible] the small fish are thrown in while the unbaited hooks are trawled astern.

Religion.—The inhabitants of the Maldive Islands are orthodox Mohammedans of the Sunni Sect. Prior to the advent of Islam Buddhism was the accepted religion, and relics can still be found throughout the islands. During the occupation of the Maldives by the Portuguese converts were made to Christianity.

[illegible] of the Maldive Islands is Abdul Majid [illegible] and his [illegible] for health reasons [illegible] he had [illegible] that he has Prime Minister of the Maldives [illegible] rule is a group of educated men who [illegible] the Sultan and the members of his [illegible] Prime Minister There is a legislative Assembly [illegible] the various atolls and islands [illegible] representatives of the different [illegible] the inhabitants [illegible] place [illegible] Male

[illegible] is A M Amin Didi who is Minister [illegible] Minister [illegible] Dhi Minister [illegible] appointments and [illegible] manner [illegible] Sultan

[illegible] has [illegible] responsible [illegible] in large [illegible] bounds [illegible] Male [illegible] government [illegible] Male

[illegible]

Religion [illegible] was religious [illegible] of the Prophet [illegible] very wealthy [illegible] been the aim [illegible] simple [illegible] have been [illegible] About six miles [illegible] A M Amin [illegible] Male [illegible] from each group [illegible] and Himbuthi [illegible] aptitude of the Maldivian [illegible] and a high [illegible] evident It is not [illegible] Arab fragments of [illegible] display of [illegible] introduction [illegible] has been published [illegible] Male [illegible] inhabitants (relations [illegible] special [illegible] Colombo

Health —Modern medicine [illegible] the Maldive Islands [illegible] present war an Indian [illegible] Male [illegible] India Witcherall visited [illegible] much of native [illegible] with varying success [illegible] which Maldivians [illegible] chronic ulceration of the legs [illegible] abrasions being [illegible] lines The native treatment [illegible] to scale its edges with [illegible] with clay If this were done [illegible] sepsis [illegible] it probably would be effective The native [illegible] the Maldivians [illegible] certain islands

The commonest disease [illegible] Maldive Islands are malaria filariasis [illegible] yaws and anemia [illegible] in Addu Atoll inherited [illegible] nutritional variety [illegible] probably the result of chronic [illegible] very common Other [illegible] and bacillary dysentery tuberculosis [illegible] and asthma infantile [illegible]

When the presence of [illegible] the patient is brought before the [illegible] if he agrees with the diagnosis [illegible] Punish the patient to an island set aside as a leper colony Hence the [illegible] is controlled but no treatment is available

H

It is [illegible] a mistake is made in diagnosis it is eventually and inevitably [illegible] by [illegible] leper colony. Food and other necessities are provided for these people by the [illegible]

[illegible] North Ceylon and South East Asia the Maldive Islands harbour scrub typhus [illegible] has assumed great importance during the war. Although much [illegible] Ewing [illegible] Hirst and Derular [illegible] and Lewthwaite and Savior [illegible] in Malaya [illegible] Walker in Sumatra Cunyon [illegible] in Northern Australia and others. The first [illegible] in the Maldive Islands was written by Hay [illegible] in 1944. He [illegible] occurring in Europeans which is interesting and the patient is [illegible] MUIR [illegible] in 1941. The clinical findings were the same as [illegible] The diagnosis was confirmed by the Weil Felix test [illegible] with *E. proteus* OX19 but in very high titre with *E. coli* [illegible]

[illegible] Hay Lewthwaite and Savior that the rat is [illegible] typhus. Malaya [illegible] examined a large series of rats trapped from [illegible] Kuala Lumpur—month by month for [illegible] He found in the town [illegible] known to attack man. However *Leptotrombidium deliense* [illegible] of the rural rats. It has already been [illegible] *L. deliense* and *L. mannsi* were the vectors of [illegible] scrub typhus [illegible] 1944.

Hay [illegible] fleas from rats in Addu Atoll and found them in large numbers in the soil and [illegible] Morphologically they resemble [illegible] *L. deliense* [illegible] but [illegible] found in the holes of trapped rats. It [illegible] in a [illegible] collection in Addu Atoll and that they developed the [illegible] in [illegible] mites.

Small typhus in the Maldive Islands has very low morbidity rate, but higher relativity [illegible] It is significant from the Service point of view. Epidemics [illegible] in Addu Atoll as suggested by Hay. The scrub mites [illegible] through the scrub and as they are [illegible] from the [illegible] they are [illegible] only a few spread [illegible] of the disease [illegible] and those only among [illegible] in the scrub.

[illegible] 7 [illegible] published in [illegible] Scrub typhus in Addu Atoll and his findings were [illegible] Hay.

In 1945 Taylor [illegible] and [illegible] in Addu Atoll with the object of investigating the [illegible] typhus. Weil Felix tests were carried out in a number of Service [illegible] Addu Atoll [illegible] Immunes were found to [illegible] in comparatively large [illegible] The [illegible] was also examined and the scrub was found. It was [illegible] that [illegible] of the scrub had neither diagnostic nor any other [illegible] Maldive Islands and that the lowest limit [illegible] 125. Hay in Addu Atoll assumed a [illegible] OX19 [illegible] large size. An exhaustive search by the Research [illegible] in the Atoll [illegible] but no [illegible] and guinea pigs but no [illegible] in any. Hay thought *L. deliense* [illegible] from land but fairly large [illegible] and they are the vectors in Addu Atoll.

It appears that typhus [illegible] the islands [illegible] with stringent anti scrub typhus [illegible] indicating the disease is of Service importance.

[illegible] Sydenham [illegible] the so called "Malian Colic" of the ancients. He [illegible] influenza which had been numerous in centuries. He states "[illegible] and November 1922 no less than 300 victims noble and plebeian [illegible] of Malta. Unfortunately he gives no clinical description of the [illegible]

[illegible] Sweating Sickness in England during the fifteenth and sixteenth [illegible] quoted by Shaw (9) wrote an account of this alarming disease described [illegible] very suddenly with shivering and violent fever headache lethargy abdominal pain and profuse perspiration. It lasted only for twenty four hours but many

die in the first [illegible] The first affected rich and poor alike and not one in [illegible] escaped Reports [illegible] of the disease occurred in England each time [illegible] summer months The nature of the disease was soon discovered and form [illegible] appears to have [illegible]

Do ver [illegible] Malaria Fever as malaria or scrub typhus Malaria is [illegible] throughout the Maldives [illegible] accounts for much of the morbidity and mortality [illegible] the inhabitant Wells [illegible] originally occupied by British officers malaria [illegible] many casualties [illegible] to be *Inoculation fever*

Each Maldivian [illegible] wells is already sterile Examinations of these wells in the native villages [illegible] that whereas Culex mosquitoes were breeding in both wells [illegible] breeding only in the freshwater wells Anti-malarial measures in India [illegible] of these wells and the removal of the natives over to other islands results [illegible] malaria from the Island

However [illegible] pressure on the other islands of the atoll and treatment for the large number of cases [illegible] among the natives [illegible] provided

Hay examined by the Weil Felix test the bloods of [illegible] children all picked at random from the native population Nine of the adults [illegible] agglutination of *B proteus* OX19 in titres above 1 40 One child produced [illegible] agglutination in titre of 1 160 and two in a titre of 1 80 the remainder agglutinated in lower titres Unfortunately the series was small but it showed no evidence of scrub typhus having a high incidence among the native population The results suggested that infection in infancy is acquired by childhood Teshima and Sarnor found that in children below working age scrub typhus was extremely rare

Investigations in Addu Atoll corroborated Gater's findings in Malaya Very few trombiculid mites were found in the compounds of houses and huts and shrews trapped in the houses had very few mites on them whereas mites were fairly abundant in the forest undergrowth that adults are exposed to more infection than children Kalra [10] studied the protective agglutinations in 355 Maldivians He found that 19 2 per cent of children and 10 6 per cent of the higher age group were negative in 1 20 dilution and 8 3 per cent of children and 7 3 per cent of the others were positive above 1 80 This indicates that unlike malaria and other diseases immunity is not acquired during childhood even in an endemic area

The percentage of people negative in dilutions of 1 20 was 12 0 for OX19 57 9 for OX19 and 35 6 for OX2 whilst in dilutions above 1 80 7 5 were positive for OX19 3 7 for OX19 and 2 5 for OX2 Kalra found the difference between OX19 and the others to be significant These figures show endemicity but the extent of the disease can only be judged if these figures could have been compared with those of an area where the disease does not exist

Thus although the evidence is not great it seems that the Maldive fever was more probably malaria than scrub typhus but the possibility of it having been some unknown virus infection should be considered

Economics —The economic resources of the Maldive Islands apart from local foodstuffs consists of fish and coconuts which are prepared as copra

Most of the fish caught are filleted sliced dried and smoked over wood fires When an adequate quantity of smoked fish is available it is taken to Male by buggalow and sold The buyers are opulent Mohammedan traders—Borahs—who then export it to Ceylon These merchants are of the Shiah sect and they originally came from Bombay and the Kathiawar coast Thus the fisherman sells his fish to a middle man who profiteers by the fluctuation of the market in Colombo Maldivian smoked fish especially that from Suvadiva is considered a delicacy in Ceylon In peacetime buggalows occasionally sailed from Addu Atoll to Colombo to sell fish direct in the market

All the commerce in Male is controlled by the Borahs who import goods and sell them to the Maldivians again at a profit

Coconut trees are controlled chiefly by the government but native landowners share in the ownership The possessions of a wealthy Maldivian are not estimated in acres as in Britain but in the number of coconut trees This indicates that to them the ground has no value but only coconut trees With the palm fronds natives can make walls and roofs for their houses construct fences to surround their houses make baskets and brushes The young coconuts are cut down and their contents consumed as a refreshing drink while the soft immature kernel is scooped out and eaten Ripe coconuts are dried and their kernels

either prepared as copra or grated and taken as an accessory in their food. From the coconut husks coir is made. This is used for rope and mat making. From the young shoots toddy is collected. It is taken as a beverage this must be consumed immediately and consequently toddy is collected from the trees twice per day. No alcoholic beverage is allowed to be consumed. Toddy which is not consumed is evaporated to make a very sweet syrup used as sugar for cooking purposes.

It is estimated that over 50 per cent. of the annual coconut crop is destroyed by rats and flying foxes such both are found in the Maldive Islands. The rats commonly found are *R norvegicus* which hide in crevices and burrow habits. Shrews are also very common. In an attempt to preserve coconuts metal bands of tin have been fixed round the tree trunks thus making it impossible for rats to climb the tree. To prevent damages from flying foxes nets are spread over the trees and bright rags are also employed to frighten them away.

The Maldive Islands are renowned for the beautiful cowrie shells which may easily be found on the reefs. These used to be exported in large quantities particularly to Bengal but of late with the trade has declined.

Food. Fish is the chief food stuff and which must be imported. Only a very few cattle and goats are found in the Maldive Islands and all the milk consumed where these animals are found is boiled. Milk has to be imported. A form of coconut milk is made by soaking grated coconut in water. Attempts have been made prior to the war to keep cattle at Addu Atoll but the Maldivians met with little success. This may have been the result of madness as the cows are reported to fear the animals. Apparent success has been attained by Army personnel in keeping goats on Gan Island.

Clothing, Housing, Fuel. Although coir is grown in the islands it is not cultivated and is imported to make clothing. All metals tools and a few European types of goods have to be imported. Despite the prodigious quantities of salt which could be recovered from the sea all the salt consumed in the Maldive Islands is imported.

There is no publishing industry in the Maldive Islands.

Since the Royal Navy has been in the Maldive Atoll a cottage industry has arisen. Local craftsmanship in the form of high polish and inlaid designs knives bracelets &c. have been made and sold to the Navy. The product is most intricate and artistically executed by the Maldivians. In 1945 small cottage industry.

Communication.—Prior to the outbreak of war the only communication with the outside world was provided by sailing vessels. These were not only Maldivian but also Indian and Ceylonese. Motor launches between islands and atolls were likewise by native craft.

In 1943 arrangements were made between the Maldivian and Ceylon Governments to arrange for a steamship service between Male and Colombo in order to reduce the price of foodstuffs but this did not meet with success.

No telephone or wireless communication existed in the Maldive Islands prior to 1939. At present W/T Station exists in Male having been installed by the R.A.F. It is operated by Maldivians and used for R.A.F. and Maldivian government purposes.

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SOME PROBLEMS OF EPILEPSY IN THE ROYAL NAVY[1]

By Surgeon Lieutenant F. Ferguson, R.N.V.R.

The manifestations of epilepsy are of course the same in sailors as in less privileged individuals. But the diagnosis and disposal of idiopathic epilepsy in the Royal Navy do have certain problems which are peculiar to maritime medicine, and some which while differing from ordinary medical practice are perhaps likely to occur in any form of State organized medical service.

[1] Read before the Naval Medical Club, the International League against Epilepsy (British Branch) on 10th June, 1945.

Ther[illegible] w ship under activ[illegible] the humblest [illegible]—the seaman [illegible] stoker with hing a valve—[illegible] station [illegible] safety of his ship and his [illegible] the obvious possibilities [illegible] injury Also under the [illegible] ditions in which [illegible] sleep in wartime such that [illegible] minor [illegible] still less [illegible] practised and even if [illegible] does not himself report his [illegible] relationship between officer and rating may [illegible] being a leading seaman who was suffering [illegible] whom certain minor peculiarities of conduct had passed [illegible] he went into the wardroom sat down and al the Dust [illegible] bizarre and outrageous that it caused immediate concern [illegible]

All this [illegible] cases are often seen while the manifestations of epilepsy are still [illegible] that because it is of such extreme importance to avoid sending [illegible] that once a suspect has been sent to hospital it is essential b[illegible] diagnosis and to make definite reports as to his fitness for [illegible] place him in the invidious position of having to come to a drug [illegible] usually regarded as inadequate evidence and where one would in ordinary [illegible] only should temporize and observe the rule further but the necessity [illegible] if it is obvious [illegible] the risks involved are considered

We have however certain [illegible] to compensate for this difficulty in part at least

First of all the proportion of fits to population is much higher afloat than ashore and every ship carries a doctor or [illegible] orth attendant or both which means that the chances of a fit being seen by an observer with at least some medical training are much better and as it is possible and in fact necessary to investigate suspects in hospital this possibility becomes all the greater In a series of a hundred cases invalided as idiopathic epilepsy over 50 per cent had a fit witnessed either in hospital or by a medical officer outside

To assist in recording details of fits all establishments are supplied with Naval Form S 1287 which is a fit form slightly modified from that in use at the National Hospital Queen Square and if all the questions are properly answered most of which can be done by any intelligent and observant witness it gives an accurate and most valuable account of the character and circumstances of the fit

Once admitted to hospital investigation of suspects follows routine lines

A full history is taken including enough psychiatric data to allow a rapid assessment of stability and emotional state to be made Often enough a history of fits which may or may not have been recognized as such prior to joining the Service will be obtained which had been suppressed at previous medical examinations When asking about the family history a positive question Which members of your family suffer from fainting attacks or fits? is more likely to produce a candid reply than less direct enquiries

A routine physical examination follows and immediately after this as a rule two minutes hyperventilation

Examination of the urine Wassermann reaction a skull X ray and electro encephalography are performed routinely lumbar puncture is not done unless there are special indications If there is any suggestion of hypoglycæmia being a contributory factor a fasting blood sugar is estimated Where no reliable independently witnessed account of an attack is available a water pitressin test is performed Two days water balance followed by 10 pitressin injections

In practice we have found that the greatest difficulty arises in differentiating between *petit mal* ordinary syncopal attacks and the so called "black-outs" of the post concussional syndrome These may indeed co-exist and merge into one another in the same individual as illustrated by the following case

This was an air mechanic of 22 who had been subject to fainting attacks since his school days under conditions such as stuffy atmospheres prolonged standing and so on conducive to simple syncope and always preceded by a minute or more of dizziness sweating and blurring of vision so that he was often able to sit down and abort an attack Two years previously he had sustained a head injury and had been unconscious for about two hours there was no fractured skull but

[illegible] he had complained of mild persistent headaches and of dizzy [illegible] getting [illegible] from a deep chair he had never, however, actually fallen [illegible] consciousness. He [illegible] recollection of the described three attacks in which [illegible] consciousness [illegible] without warning or apparent provocation and [illegible] injury [illegible] or incontinence. Another rating, who had seen no [illegible] attacks, was able to [illegible] that there was no spasmodic or convulsive feature. In hospital all investigations [illegible] negative, and E.E.G. were negative.

[illegible] of attacks of unconsciousness without warning or provocation is [illegible] very suggestive of epilepsy, though not unknown in the post-[illegible] syndrome. Gowers has described the gradual merging of fainting attacks when they occur frequently into frank epilepsy; on the other hand, in this case an epileptic tendency might perhaps have been released by his head injury.

The help obtained from E.E.G. and water pressure test in such cases is frequently disappointing, though the latter, if positive, seems to give absolute proof of epilepsy, but as a rule it has been found that the case history provides by far the most valuable evidence.

Analysing the last 100 cases invalided from a naval hospital as idiopathic epilepsy (including both *grand mal* and *petit mal*) the following figures were obtained:

An E.E.G. was performed on 82 cases and was considered suggestive of epilepsy in 57 per cent. of them. In 57 cases where the diagnosis was made on both a very strongly suggestive history and a convincingly recorded attack the percentage of positive E.E.G.s was 56 per cent.

Corresponding figures for the water pressure test are less convincing, because it was normally omitted if an attack had already been definitely recorded, which might exclude the cases with the most frequent and easily precipitated attacks, but it was done on 68 of the 100 cases and was positive in only 39 per cent., and taking the cases where the other evidence was strongest—i.e. those with a strongly suggestive history and a positive E.E.G.—was positive in only 20 per cent. This at least suggests that the water pressure test has little value as negative evidence.

A test which has been from Baselmi and is characteristically positive in the post-concussional syndrome is known to naval medical officers as Simpson's test, after its originator, Surgeon Lieutenant-Commander Simpson, R.N.V.R. The patient is told to touch his toes and then to shake his head vigorously; when he straightens up, if the test is positive, there is obvious instability, and sulje [illegible] dizziness and discomfort, and the conjunctivae may be suffused.

Hysteroepilepsy seems to be rare in the Navy, and I have only seen one malingerer feigning epilepsy in eighteen months in a neurological ward; he owned up after two days, before his special investigations had really been started.

As regards disposal of these cases, the present policy is to invalid all definite epileptics among H.O. ratings. Doubtful cases may be observed on shore service for a period if their retention is worth while on general grounds.

At one period, when the manning position was much more acute, an attempt was made to retain valuable ratings who had perhaps had only one attack or where there had been strong provoking circumstances, and they were returned to duty, taking full risk with the recommendation that they should be invalided if further attacks occurred. Unfortunately, there was no means of following up such cases and learning whether the policy was justified or not; certainly very few of them returned to us, but some may have fallen by the wayside and been invalided from other hospitals.

Finally, there is one minor difficulty which might well arise if a State Medical Service were [illegible] long—that is that when a man is invalided from the Service with the diagnosis of epilepsy, the Ministry of Labour and the Ministry of Pensions have to be informed of the invaliding disability. The attitude of the general public and unfortunately at times of Ministry officials is frequently ignorant and prejudiced, and we have received bitter letters of complaint from former patients who have found that they have been turned down for jobs often well within their capabilities, because their complaint has been discovered. Until the lay public are more educated in such matters, there is something to be said for the military practice of invaliding epileptics under some such non-committal diagnosis as "Convulsions—N.Y.D." though this is not at present acceptable to the naval authorities.

I am much indebted to Surgeon Captain Macdonald Critchley, R.N.V.R., for advice and help in the preparation of this paper.

PSYCHIATRY IN THE LEVANT

[illegible] LIEUTENANT COMMANDER M. [illegible]

[illegible] at Harley Street [illegible] luxuriant [illegible] Illness [illegible] examples will illustrate [illegible]

If [illegible] information [illegible] are deemed [illegible] other [illegible] the psychiatric [illegible] whole [illegible] On [illegible]

[illegible]

[illegible] Bulk [illegible]

It [illegible]

(1) [illegible] the [illegible] the [illegible]

(2) [illegible] first [illegible] and [illegible]

[illegible]

[illegible] matter for speculation. The [illegible] in the [illegible] to another in appears [illegible] have [illegible] ashore in the same [illegible] about [illegible] scarcely a sensible brain, [illegible] contribute [illegible] and in normal subjects [illegible] It appears [illegible] in many failure in the [illegible] but an express [illegible] which reduced the [illegible] and it is [illegible] are there but are [illegible] The [illegible] that this state of affairs [illegible] of monotony is [illegible] present in [illegible] life where in a [illegible] I am not always [illegible] that the restrictions [illegible] of opportunity for [illegible] them by choice [illegible] (although punctuated [illegible] certain (it would

[illegible] necessary [illegible] such as [illegible] but it would [illegible] unusually [illegible]

[illegible] among [illegible] a [illegible] enhanced [illegible]

[illegible] patients [illegible] angry [illegible] sleep [illegible] dreams [illegible] patients [illegible] though disturbed [illegible] a bout of tension [illegible] in which the [illegible] more or less [illegible] is extreme talk [illegible] the patient is [illegible] past. Accompanying [illegible] with suicidal [illegible] of function) is [illegible] part of the general [illegible] and the atrophic [illegible] stimulated to initiate [illegible]

The condition [illegible] depression of a [illegible] far more than the [illegible] patient seeks [illegible] behaviour. (3) there [illegible] depression deepened [illegible] as in ordinary [illegible] fashion. (5) there is [illegible] in the specially [illegible] patients [illegible] ment long, after the [illegible] On the [illegible] phenomena of irritability [illegible] tism in the [illegible] without being the least psychotic [illegible] aggression [illegible] being round an [illegible] the side.)

The most [illegible] example [illegible] had had considerable war [illegible] ment where he found himself the [illegible] at the Royal [illegible] native clerks as company during duty [illegible] some distance [illegible] Army officers whom he disliked. His environment [illegible] satisfactory [illegible] heat, but his duties were monotonous and [illegible] After some [illegible] signs and symptoms of tension, feeling that [illegible] to scream and break the place up, which he steadily controlled, these came in bouts between which he sank into a state of almost total apathy. He continued to wash and shave, though he did not bother about clothing and he contrived to get through his work (better on some days than others) but he ceased to write home to read or listen to news or to maintain any contact with the outside world except as demanded by his work. He spent hours in a state of dreamy contemplation, any

intrusion into which [illegible] wish [illegible] He [illegible] all feeling for his wife [illegible] been to return to them [illegible] wish [illegible] humble. When more than a year after the [illegible] sister in a rather peculiar state [illegible] sion to hospital he was naturally [illegible] appear to have exp[illegible] He recovered rapidly. [illegible] Reference is to the benign [illegible] the pursuit of as [illegible] taken around [illegible] evidence [illegible] which had been [illegible] xpiration of [illegible] remarkable [illegible] circle [illegible] of the [illegible] measures [illegible] probabilities [illegible] may [illegible] the [illegible] Only two [illegible] the [illegible] which [illegible] stat[illegible] with [illegible] mill has [illegible] that [illegible] such [illegible] Will [illegible] whether the [illegible] addressed in the [illegible]

[illegible] in the sense of offering various [illegible] is [illegible] a painful [illegible] [illegible] the slightest use. The condition [illegible] disappear to a greater or less [illegible] but invariably recurred in the following moment. Paroxysmal [illegible] their transitory effectiveness [illegible] perhaps. Tricks of the trade [illegible] electrical stimulation [illegible] Although accessible to [illegible] with abnormal postures apparently [illegible] accessible to therapeutics [illegible] last neither hitherto described above. One [illegible] the difficulty of observing the [illegible] for a length of time it is not known what all have been the effect of immediate [illegible] in physiology, nor is it known what [illegible] they may ultimately [illegible] But it is in an Indian hospital [illegible] despite every attention [illegible] who spoke their language [illegible] persist unaffected and [illegible] looked as though they might be [illegible] Discussion showed [illegible] despite much mental energy and [illegible] the idea that hysterical [illegible] patients in India constitute an insoluble problem [illegible] surprise [illegible] importance. Invaluable appears [illegible] And it may be added that [illegible] suggestion so often [illegible] that these cases [illegible] as they sit foot on the hospital [illegible] without foundation.

These two [illegible] with total lack of control and [illegible] and unalterably [illegible] unreasonably and impartially [illegible] fantastic emotional [illegible] observed in nurses in the Southern [illegible] but only after [illegible] one case of prolonged [illegible] backward [illegible] later recurred as the patient [illegible] But nothing [illegible] seen uncomplicated [illegible] stable enough to have [illegible] hartmann [illegible] period.

(3) *African Group.* — The African [illegible] presenting [illegible] as their special feature [illegible] white feelings as of scorpions [illegible] feelings and bubbles burning. [illegible] these patients [illegible] poor thought had [illegible] matter this might have [illegible] But in an office containing the [illegible] nothing of a shock while remaining [illegible] and [illegible] Arm forms 1229 and 1237. Here is [illegible] and collapsed city of Alexandria and here [illegible] mountains, [illegible] of African witchcraft [illegible] and thought it as said that occasionally the application of [illegible] therapy or even [illegible] sphere of archaic alchemy. Here is [illegible] relapse was the rule. The language [illegible] psychotherapy in most cases [illegible] and of most primitive [illegible] formication, a creeping sensation [illegible] paresthesia confined to the [illegible] drowsy [illegible] British Medical Mission. [illegible] thinking more or less unhappy guess [illegible]

The feelings of the psychiatrist can be [illegible] to furnish an opinion as to the [illegible] African nature with no word of English [illegible]

These primitive patients showed in general a [illegible] which was rather engaging, except that it was [illegible] with [illegible] (with their ceremonial and opportunism for humility) [illegible] and avoidable intractions of discipline.

(4) *Balkan Group.* — These cases showed [illegible] strongly flavoured by the political background [illegible] patient [illegible] Neither [illegible] some measure of dissatisfaction [illegible] (the [illegible] was in

[illegible] over a [illegible] all other [illegible] then which [illegible] been [illegible] to [illegible] of those families [illegible] Russians) but as [illegible] allies to contend with [illegible] came about that [illegible] nized by the Allied [illegible] those parties that [illegible] med an ascendancy [illegible] in London [illegible] countries future [illegible] parties caused [illegible] threats of direct [illegible] threats of [illegible] countries [illegible] is to the actual [illegible] was [illegible] in an administrative [illegible] nces that purge should [illegible] whole atmosphere became [illegible]

[illegible] followed as a direct result [illegible] or possibly sound basis [illegible]

[illegible] a good Service record [illegible] himself been threatened [illegible] result, not of the political [illegible] that none of his col [illegible] all trust, none of his [illegible] ments showed his own [illegible] covered he once [illegible] full of a whispering [illegible] had no confidence [illegible] maintained and he [illegible] not [illegible] situation so harassed [illegible] edict [illegible] If [illegible] absence of the necessary [illegible] without the possibility of [illegible] outcome.

[illegible] list of established and [illegible] as a result of threats [illegible] was undoubtedly to some [illegible] everybody constantly [illegible] developed a full [illegible] because of the mistrust [illegible] footstep in the passage [illegible] came connected with a dictap[illegible] with [illegible] of radio messages accusing [illegible] instruct [illegible] remarks abounded.

When [illegible] still persisted [illegible] only an extension into fantasy if [illegible]

Again [illegible] of 18 a Jugoslav [illegible] Jugoslavia against invasion by the Italians and was [illegible] corrupted by [illegible] service against the Allies. He had then been captured by the Allies in North Africa [illegible] turned over to the Jugoslav authorities who in their [illegible] conscripted him immediately against the Italians again. When a division occurred among his own countrymen he became quite bewildered. He was not a good

[illegible] of his statement [illegible] their [illegible] not [illegible] whether [illegible] or not the [illegible] of the last estimate [illegible] most depressed apathy [illegible] With no special [illegible] bring his country [illegible] trusted and [illegible] surprising that [illegible] circumstances [illegible] to try [illegible] family [illegible] boiling [illegible]

Other [illegible] [illegible] this [illegible] undoubtedly form the [illegible] national unity and to the [illegible] [illegible] [illegible] all the participating [illegible]

(8) *Local Enthusiasms*—The [illegible] large greater number and their [illegible] was locally recruited. The [illegible] Palestine in the Transjordania and [illegible] were at times remarkable.

The typhoons have always [illegible] affiliation [illegible] Government House has been [illegible] inhabitants of a British possession [illegible] under British authority. They [illegible] considered suitable for Naval Service [illegible] before starting training. [illegible] basic allegiance to and envy [illegible] opportunity for self expression.

Those associates in the Middle East [illegible] themselves similarly placed. [illegible] the true sense of the term that [illegible] return to Britain permanently [illegible] universities they have [illegible] their habitat they [illegible] instances [illegible] British [illegible] joined by general [illegible] British passport in the Middle East [illegible] many but [illegible] sense.

It must be remembered that [illegible] British [illegible] the Crimean [illegible] was [illegible] 1914 that she was the [illegible] Protectorate [illegible] [illegible] 1923 [illegible] 1936. [illegible] a few years before the war than for [illegible] that term applied in the ordinary sense of the word. [illegible] very large number of people who are [illegible] use of the land as a sort of [illegible] Armenians, Turks, Greeks, &c. and they will [illegible] of passports [illegible] the passports will have [illegible] British [illegible] from which [illegible]

Thus it might [illegible] all those who [illegible] without ever visiting [illegible] any at all and who bring no more allegiance to the British [illegible] would [illegible] himself appreciate [illegible]

[illegible] Some as the [illegible] submitted with resignation [illegible] which appeared [illegible] for [illegible]

[illegible] to be examined [illegible] in criminal cases by [illegible] right [illegible] Occasionally the interviews [illegible] because of [illegible] of the [illegible] ability to take [illegible] in the language [illegible] with the [illegible] ing men bringing [illegible] family [illegible] Rarely the [illegible] opportunity [illegible] an endless [illegible] the RAF [illegible] family [illegible] Mark was [illegible] job in the [illegible]

[illegible] Orthodox [illegible] the Service [illegible]

[illegible] Asymmetrical [illegible] the same [illegible] of the British [illegible] the Jews less [illegible] discussion [illegible] patients [illegible] responsible [illegible] over [illegible] of pressure [illegible] It is [illegible] all the men have [illegible] the appearance [illegible] these [illegible] feelings of these men not enough to [illegible] level

[illegible] This type of [illegible] obtained from [illegible] stone [illegible] throughout the Middle [illegible] rather than [illegible] blair [illegible] Tripus manifesting more to [illegible] through [illegible] temperature [illegible] the [illegible] Tribunals [illegible] Musa Mahdi Tribunals [illegible] general [illegible] great majority [illegible] minded [illegible] of them [illegible]

[illegible] were [illegible] employed [illegible] duties [illegible] in this girl with [illegible] to be [illegible] by the [illegible] medically unemployable [illegible] smokers [illegible] in non-[illegible] with the social [illegible] motives [illegible] for [illegible]

[illegible] the Palestinian recruits

But [illegible] volunteers [illegible] not seem having entered from [illegible] Jews [illegible] and found themselves bewildered [illegible] of them [illegible] to Palestine [illegible] were Zionists who had gone to the [illegible] thing in common with others There were Arabs [illegible] Jews but were inflammable in proximity [illegible] Cypriots who had nothing in common with either There were the British subjects [illegible] passport who had nothing in common with anyone

[illegible] heterogeneous [illegible] represented an administrative problem [illegible] they were [illegible] the required standard as a group [illegible] divisions [illegible] lowering of level. Further [illegible] that [illegible] made it desirable that [illegible] as regards [illegible]

An additional reason was that the linguistic difficulty made it [illegible] Divisional officers [illegible] establishments where large numbers [illegible] were involved [illegible] question was present. It [illegible] reduce the amount [illegible] which otherwise would have [illegible]

But at the same time [illegible] disadvantages. In the first place [illegible] emphasized the [illegible] the Service [illegible] any feeling [illegible] which they might [illegible] the better type [illegible] bound to [illegible] with these [illegible] who [illegible] there was inevitably some [illegible] of the [illegible] And [illegible] recognition [illegible] warfare [illegible] and general [illegible] the [illegible] amongst [illegible]

It was [illegible] anything like [illegible] within [illegible] There were cliques of [illegible] with [illegible] and [illegible] of [illegible] in the [illegible] property [illegible] would [illegible] of [illegible] apparently [illegible] would [illegible] emphasis [illegible]

And [illegible] But [illegible] willingness [illegible]

[illegible] they had not [illegible] of the [illegible] they were [illegible] themselves and they [illegible]

This was [illegible] potentially [illegible] Jewish ratings who were [illegible] Palestine, while the Arabs [illegible] gained—proved [illegible] developments on [illegible] the credit of the [illegible] by virtue of happening [illegible] generalization.

[illegible] to be lost sight of [illegible] taken as a whole there was a very [illegible] and a very high proportion of [illegible] with the incidence [illegible] The commonest offences were [illegible] laziness and breaking [illegible] organized parties while [illegible] (and [illegible] equipment, &c.) and fighting (and [illegible] stabbing) were common

and dr [illegible] The [illegible] Quarters wh[illegible]

Th[illegible] that [illegible] group [illegible]

[illegible]

[illegible]

[illegible] household [illegible] He [illegible] universit[illegible] dull [illegible]

[illegible] And the whole general insecurity to which the patient had been subjected in escaping from Hungary contributed powerfully to this delayed reaction. These factors had conditioned him to acute anxiety states.

In other cases the complete alteration of prospects the unsettled personal financial insecurity and frequently the lack of moral support caused by separation from the family, the anxiety [illegible] those that they had been obliged to leave behind and the inability to form any plan of life with which to cope with this [illegible] habit to catastrophic change, [illegible] contributed to produce states of mind characterized by quickness ready flaring up of anxiety [illegible] and an altered perspective in which to the subject minor disciplinary infractions [illegible] and so trifling as to be unnoticed. Further just as it is only fair to state that I saw several who had recently survived the sinking of a ship containing quantities of valuables [illegible] *water* but in numerous instances a few dozen cases of spirits should in the security of a new shore appointment now fell to comparatively unimportant whether or not he needed the opening of a bottle of gin so did it seem to certain of these refugee volunteers imperatory to fix whether they returned from shore leave at 2200 or 2211. And the fact that these refugee ratings had no means by which they could canalize their aggressiveness but were bound for the most part to tedious and individually unimportant jobs increased their disciplinary disregard their disturbances of temperament and their liability to nervous tension.

To this problem there was no easy solution. As much as possible was done by the incentive in the direction of establishing depot ships manned by local authorities harbour parties for running, motor boat services &c. but opportunities for such arrangements were too few and the great barrier of frustration for the most part remained.

Judging on the psychiatric cases alone there is no doubt that the policy of restricting the local entries to shore service was eminently correct for those cases carried with them as has been said an acquired liability to anxiety as the result of their experiences which would have rendered them very valuable in war stress and of true of this particular group of cases who appear originally to have been of stable character within gross neuropathy it can be no less true of the other groups of cases whose instability was not thus acquired.

But it is felt that judgment should not be made on the basis of psychiatric cases alone and it is believed that if staging appointments had been available to selected local entries (selected by a Board comprised of those who had had their large sea time under observation and if necessary implemented by psychiatric assessment) something might have been achieved in allaying the individual discontent that was widespread amongst them.

The schizoid hysteric group resembled the bodily hysteric Indians in the extreme form of reaction that they showed. But whereas the Indians possessed a sustained state these local entries showed an extraordinary oscillation between being practically normal at one moment and practically psychotic at another. They were mainly persons of Levantine or Asiatic origin but there were a few Central European refugees amongst them all of whom had been subjected to trauma in our form or another. They were people grossly unstable by constitution and the attraction of a meal or an unaccustomed opportunity of shore leave would suffice to sway them towards something approaching normality while a frustration or argument would drive them into weird dissociated states in which they would make bizarre gestures mutter to themselves roll the eyes write on the floor spit promiscuously scream emit peals of Gargantuan laughter or break the furniture. In most instances they would become for a while completely inaccessible either through excitement or withdrawal. While they sometimes whipped themselves up into or sometimes merely acquiesced in the development of these states this was something beyond mere malingering a gift conferred upon them by an extreme liability.

These unlike anything seen among hysterical patients in the British Isles showed in exaggerated form the disrupting power of the emotionalism commonly seen among Levantine people when carried to extremes. A traveller long accustomed to commerce in the East once informed the writer that he had developed a technique in business which had had a peculiar success in Baghdad. This had depended upon conducting business negotiations in a Turkish Bath with the gradual steering of the negotiating parties into the hotter and hottest rooms as the climax of the deal was approached. This form of balneotherapy so effectively damped the energy necessary for histrionic display that the deals were not only more successful but were conducted in half the time. It was frequently the writer's lot to reflect that such a technique was not without possibilities in psychiatry.

SUMMARY

In [illegible] Medical Service [illegible] in the Levant five groups of patients [illegible] consideration [illegible] account of certain features shown that are [illegible]

[illegible] to impairment of memory was noted among the British [illegible] circumstances to status of apathy with little true depression but [illegible] fact. This was a condition in some measure comparable with [illegible] observed among prisoners-of war

[illegible] hysterical states occurring in Indians are mentioned

[illegible] (peculiarly occurring as a result of certain primitive beliefs among African [illegible] Arabs [illegible] tribes) is described

[illegible] related showing various directions in which the political breakdown [illegible] lose to nervous breakdown of its subjects

[illegible] administrative and psychiatric difficulties arising out of the [illegible] are considered and mention made of the predisposition [illegible] refugees from Central Europe as a result of their experiences [illegible] engendered by their strictly non combatant duties and of [illegible] form of hysteria shown by natives of the Levant but occurring [illegible] Europe whose constitutional instability had been further [illegible] and physical trauma

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[illegible] ALLERGY AND DOLICHO MEGACOLON IN FATHER AND DAUGHTER

By Surgeon Commander J. W. L. Crosfill, R.N.

[illegible] unmarried female aged 40 and an only child being examined preparatory to [illegible] stated that she had a "misplaced heart." Radiologically there was a pseudo [illegible] and a grossly raised left diaphragm (*see* fig. 1) an appearance suggesting the [illegible] She stated that her father (aged 73) was known to have a similar displacement [illegible] heart and that both her father and herself were life long sufferers from hay fever [illegible] the kindness of Dr. F. H. Rotherham I have been given the previous history and relevant skiagrams of the father and daughter prior to joining the W.R.N.S.

	Father	*Daughter*
Age at present	73	40
Migraine	Present	Present
Asthmatic attacks, onset	45–50	30–35
Hay fever	Present	Present
Heart displacement	Heart abnormally placed	aged 40–45
Hay fever	From childhood and severe	From childhood and severe
Urticaria—tracks	Present	Present (once with severe oedema of glottis)
Eczema	Negative	Negative
Immediate allergy	Nil	Present
Migraine	Nil	Nil
Vertigo	±	±
Mega bladder	Not investigated	Not investigated
	No symptoms	No symptoms
Hemorrhoids	Present	Nil
Varicose veins	Present	Nil
Achalasia of oesophagus	No symptoms	Negative to barium swallow
Fibrosis of epididymis	Present	
Vaginal syndrome	—	Watery discharge at intervals
Progressive muscular atrophy	Diagnosed 17 years ago	Not present
Constipation	Present	Present
Urticaria	Not apparent	Frequent chronic attacks with oedema

Tables at Onset of Megacolon and Pseudo-dextrocardia

Father.—He had led an active life, being a tennis tournament player of local note until in his early fifties there was an insidious onset of progressive muscular atrophy, diagnosed at the age of 56. During the same period he developed an obstinate constipation which in [illegible] way interfered with his general health or well being. This constipation was [illegible] diagnosed when he was 60 by Dr. F. H. Rotherham (*see* fig. 2)

The [illegible] of the megacolon cannot be stated definitely. From the appearances in [illegible] apparent that there is a hypertrophy in the rectum and pelvic colon with a well established raising of the diaphragm and pseudo dextrocardia. It is known however with certainty that the pseudo dextrocardia was present in his middle forties.

It may therefore be assumed that his megacolon developed during the ages of 50–55 being closely related in time to the development of his prostatic enlargement and atrophy.

Fig. 1.—[illegible] 1945. P.A. view showing raising of the Left Diaphragm and Pseudo Dextrocardia.

Daughter.—The megacolon in the daughter is apparently not as advanced as that of the father if hypertrophic convolutions are taken as the criterion. Nevertheless the degree of pseudo-dextrocardia and raising of the diaphragm (see figs. 1 and 4) is of a comparable degree.

The daughter was investigated by Sir Arthur Hurst in 1934, her age then being 29, for intestinal allergy. The X-ray report (see fig. 3) given at that time shows that no abnormality pointing to dolicho megacolon is present, and it is specifically stated that the diaphragm was normal. It is probable that the present dolicho megacolon was connected with the colonic dysfunction at the age of 29, being at that time a disturbance of function rather than of structure. Accordingly it may be assumed that the structural alterations date from an age between 30 and 40, the latter being her present age, with dolicho-colon well developed and pseudo dextrocardia very definitely present. Thus the phenomena of anticipation in the daughter would appear to be present.

Chest [illegible] *in the daughter*.—The apex beat could not be palpated. On auscultation sounds of [illegible] intensity were heard close to the sternum both to left and right. Both these sounds [illegible] in intensity on being traced laterally to the nipple areas. The breath sounds were well heard in the left lower chest presumably due to lung overlapping the [illegible] heart. There was no abnormality on percussion. The only suggestive finding [illegible] the [illegible] shadow of the X-ray appearances was the presence of numerous fond [illegible] in the 5th left intercostal space anteriorly.

[illegible] was not demonstrable at either side of the sternum. The daughter [illegible] healthy appearance and was of good colour and physique. No abnormality was [illegible] no bulging of the epigastrium or left lower costa was present. [illegible] dysfunction could be obtained.

[illegible] Both father and daughter are described by Dr. F. H. Rotherham as [illegible] the most manifestations of hay fever he has ever seen in a long experience [illegible] to be sensitive to several proteins and pollens and some years ago [illegible] but with no apparent benefit.

[illegible]

Both [illegible] have had frank hay fever attacks although [illegible] prominent part of the [illegible]. On one occasion whilst on the golf course the daughter had an attack of oedema of the glottis of very severe degree. Assistance was [illegible] and adrenalin gave the required relief. This incident was fortunately unique.

It is a point to be noted that neither father nor daughter has ever suffered from any eczematoid state. Neither has had a frank asthma attack although sibilant rhonchi are present on occasions.

No eosinophilia history is available.

Intestinal Manifestations

Father.—Apart from his constipation the father has not experienced any disability due to his bowel abnormality. He has had neither volvulus, spurious diarrhœa nor mucous colitis.

Daughter.—In 1934 the daughter was investigated by Sir Arthur Hurst with a view to elucidating the symptom of upper abdominal colic associated with the passage of water from the bowels (*see* fig. 3). This water was in fact little more than water on analysis—having the merest trace of albumin content, no mucus, no faecal material and no other suggestive constituent. Sir Arthur Hurst stated in his report that the case was unique in his

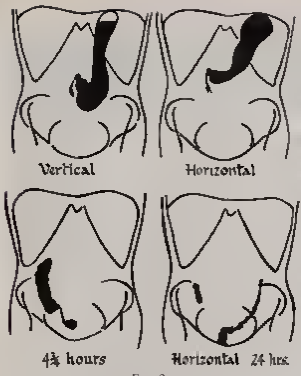

Vertical
Horizontal
4½ hours
Horizontal 24 hrs.

FIG 3a

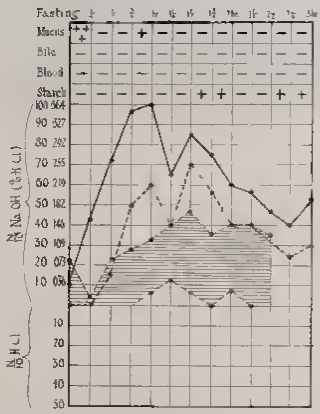

Fasting
Mucus
Bile
Blood
Starch
N/10 Na OH (Gr. C.)
N/10 H Cl

FIG 3b

Hypertrophic

[illegible] There were [illegible] of this water the [illegible] of which [illegible] (see also the [illegible] urinary manifestations) The fractional test meal [illegible] reproduce [illegible] 36)

Comment [illegible]

Father (a) Bladder [illegible] in conjunction with megacolon due to a similar autonomic [illegible] No special investigation has been carried out in the case of either father or daughter Neither patient complains of any symptoms referable to the bladder function

(b) At about the age of 60 the father developed a curve of his penis during erection As these erections have disappeared with advancing age a palpable fibrous replacement has appeared in the corpora cavernosa

Daughter—Whilst under investigation in 1934 she complained of periodic attacks of vaginal discharge for which she was examined The discharge was accompanied by chilly

[1] I saw a case in 1928 of Dr Wm Warnock's a middle aged married woman who for many years had passed pure water per rectum The frequency and urgency was such that she was restricted to the vicinity of her own home No causation was determined but no allergy was otherwise apparent It is not known whether she developed a gastritis The after history is unknown as she left the district and died subsequently The appearance of the water presented in was that of pure water of similar fluidity odourless and free from mucus or foreign bodies instillment macroscopically except for an occasional portion of undigested food Her general health was good

[illegible] lungs in the [illegible] although distinct [illegible] recommenced the latter [illegible] discharge has run [illegible] watery discharge. No [illegible] found in the genitalia.

Varicose Veins and Hemorrhoids.—These are very [illegible] but the daughter is [illegible] The father has suffered [illegible] urinary incidents in connection with his hemorrhoids.

Discussion

Hay fever is by no means an uncommon complaint [illegible] in this father and daughter. Megacolon is not a known sequel to life long allergy. One [illegible] to trace any reference to any such case. The occurrence of [illegible] in the brother of these patients might be nothing more than coincidence. The perhaps [illegible] coincidence to suggest that the occurrence of megacolon with [illegible] in this father and daughter is the working of pure chance since megacolon is relatively [illegible] condition.

Granted the existence of a transmissible allergy, it is [illegible] to argue that both father and daughter might develop megacolon since [illegible] is apparently due to autonomic imbalance and its effects in the spinal [illegible] It is [illegible] to imagine a gross life long allergy with either its frequent demands [illegible] between adrenalin output—or adrenalin sympathetic activity—eventually [illegible] the balance. In such circumstances it is possible to visualize the [illegible] for both micro and megacolon and other instances of autonomic imbalance [illegible] the [illegible] hypothalamic nuclei. Unfortunately for this theory [illegible] appear to follow hay fever. Were the above explanation alone sufficient [illegible] cases of adult megacolon should occur.

Neither does adult megacolon appear to be a transmitted [illegible] although there is a marked sex predilection for males in the case of the congenital Hirschsprung type. The sex distribution in the adult type is equal.

The hypothalamic nuclei have now been implicated in the [illegible] of the encephalic autonomic epilepsy and sham rage and intestinal [illegible] and it is not theoretically inconceivable that allergy or the expression of allergy might be due to autonomic imbalance centrally decontrolled.

To account for the parallel pictures in father and daughter two courses appear open. First that of developing megacolon as a sequel to allergy, secondly that both [illegible] part and parcel of the same defect.

As briefly indicated previously statistics are against [illegible] long, as sequel to allergy particularly so in this family incidence. It would appear that this particular case history represents a transmitted defect of what might be loosely termed a micro abiotrophy. In connection with this suggestion is the fact that the signs in the daughter show anticipation, that is the earlier onset of symptoms in successive generations, a recognized phenomenon in neuro abiotrophies.

The outstanding dissimilarity in the two histories is that the father has a frank progressive muscular atrophy. Whether or not this should be included in the fundamental picture is a matter of opinion. Should this or an allied development occur in the daughter it will be more than interesting. So far this critical finding lies in the future. Even if anticipation be invoked the daughter is scarcely old enough for such a pathology to have made its appearance.

The occurrence of the fibrosis in the corpora cavernosa of idiopathic origin is also interesting. In the Werdnig Hoffmann type of infantile progressive muscular atrophy which is familial elastic fibrosis takes place in the voluntary muscle.

Is this fibrosis in the father's penis the result of a vasomotor neuropathy progressive muscular atrophy and mono infantilism or is it merely an incidental finding?

That the daughter suffered from a watery vagina (vaginal allergy?) with a presumed vasomotor or pilomotor response in the suprapubic and inguinal area is at least suggestive of a corresponding pathology in the father's fibrosis.

Summary

(1) Development of dolicho-megacolon with pseudo dextrocardia in adult life in father and daughter both of whom suffer from life long hay fever.

(2) Anticipation of signs in the daughter.

(3) The existence of other possible comparable pathologic in the genito urinary tract.

(4) The possible association of progressive muscular atrophy in the above syndrome of what is submitted to be an instance of micro abiotrophic inheritance.

[illegible] RESISTANT PNEUMOCOCCAL [illegible] TREATED WITH PENICILLIN

[illegible] THOMAS C. LIMANDER G. I. WARD [illegible]

[illegible] 1944 [illegible] aged 60 was brought into hospital [illegible] condition. His [illegible] commenced [illegible] only within the previous twenty [illegible] with lassitude and [illegible] painful [illegible] coughing. He stated that he had [illegible] been subject to bronchitis [illegible] but [illegible] short of breath for three years.

He was examined: his pulse was 96, temperature 100 [illegible] and his sputum was slight in quantity and [illegible] streaked with blood.

Twenty-four hours after admission he produced rusty sputum [illegible] clinical signs of pneumonia in the right base. 28 grams of sulphathiazole were given over the next few days but his [illegible] persisted and his condition remained serious. The sputum negative for *B. tuberculosis*, became purulent.

Five days after admission there was clinical evidence of fluid at the right base confirmed by skiagram (fig. 1) and paracentesis just below the angle of the right scapula produced 30 c.c. of thick green purulent fluid.

His blood count at this time was as follows: R.B.C. 3,160,000; W.B.C. 20,600; Hb. 75 per cent. [illegible]

FIG. 1

[illegible] attempt was made to localize [illegible] with a new [illegible] Three attempts however failed to [illegible] any fluid [illegible] A skiagram taken after these abortive attempts showed no change [illegible] A further course of 19 grm of sulphathiazole failed to cause any improvement

The pneumococci in the fluid removed at needling was [illegible] pneumococci [illegible] one in ten thousand sulphonamide but [illegible] penicillin

A [illegible] of penicillin was begun 150 000 units were given intramuscularly in six [illegible] and [illegible] two days later a further 96 000 units were [illegible] 3 c c [illegible] intramuscularly every three hours for five days A skiagram taken at the end of this course showed some improvement B S R 50 mm

A week later his temperature and pulse were once more [illegible] with a course of penicillin—a total of 60 000 units—was given Following this his [illegible] showed a marked improvement B S R 42 mm

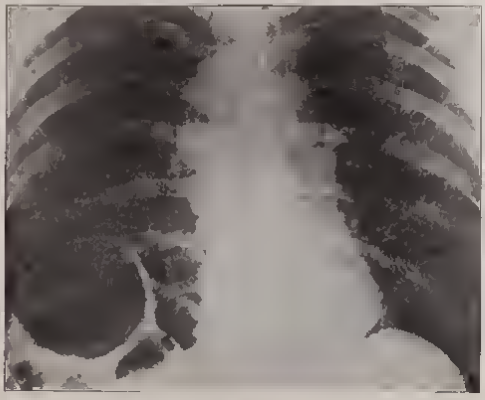
His subsequent recovery was uninterrupted and he was discharged from hospital on April 19 (*see* fig 2 for skiagram taken that day) After two months sick leave he resumed his duty and six months later he was heard to be better than he had been for many years

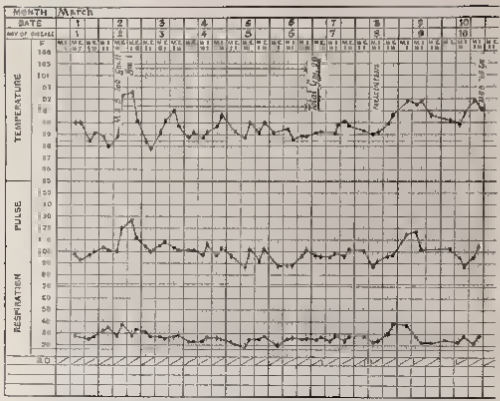
The interest in this case is in the fact that although the pneumococci were [illegible] to sulphonamide—as shown by clinical progress and by the pathological test—they were resistant to penicillin and improvement occurred after the courses of the latter

SUMMARY

This was a case of localized empyema following pneumonia which was treated successfully with 306 000 units of penicillin after two courses of sulphathiazole totalling 47 grm had failed

I am indebted to Surgeon Captain [illegible] R N V R Corporation [illegible] for permission to publish this case




MONTH March
DATE
DAY OF DISEASE
TEMPERATURE
PULSE
RESPIRATION
Sulphadiazine
Sulphathiazole
PRESCRIPTIONS


MONTH March
DATE
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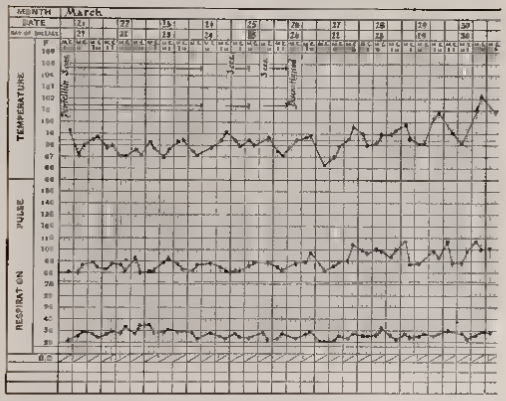
TEMPERATURE
PULSE
RESPIRATION
Sulphadiazine
PENICILLIN
PENICILLIN 8m.
PENICILLIN 8m.


MONTH March
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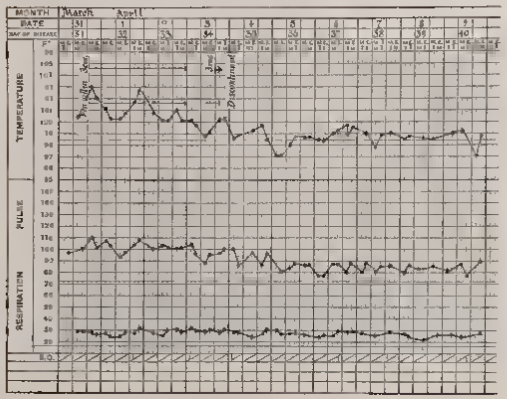
MONTH March April
DATE
DAY OF DISEASE
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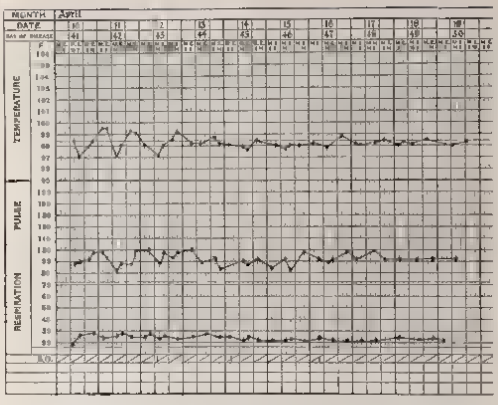

BLACKWATER FEVER

By Surgeon Commander [illegible] A. Fraser, R.N.

The following cases were seen some years ago in England and in retrospect they present certain unusual features which may be of general interest.

[illegible] man reported sick on board with malaise, headache, tightness in the [illegible] with impaired vision, cough and irregular fever shortly after leaving Freetown. Sweats [illegible] Splenic pulse were present and jaundice and malaria was suspected at the [illegible] On landing at Gibraltar all were diagnosed as cases of blackwater fever and the [illegible] two patients with typical post mortem findings in one case. Blood films were [illegible] *Plasmodium falciparum* throughout.

[illegible] survivors were seen for a brief moment at a Bristol hospital in England before [illegible] examination which was such a prominent feature of hospital life during [illegible] studies. However they very kindly replied to a circular letter and some [illegible] information to hand. None of them had been ashore during the three weeks stay [illegible] and none of them had been taking quinine. All three had been friends in [illegible] and apparently included the two bachelors in their group. They had recently come from the Northern Patrol and only one gave a previous history of malaria in 1917. Every patient had [illegible] dark urine two to three days after the onset of symptoms. There appeared to be no question of a common exposure to an alkaloid or ingested hemolytic agent.

Thus it would appear that this small intimate group without intent with the shore were exposed to intravenous and perhaps repeated inoculation with subtertian malaria. The precipitating hemolytic factor can only be guessed at.

Blackwater fever is generally regarded as a rare complication of subtertian malaria. Repeated attacks are usually required although the subclinical variety with acute hemolysis is not uncommon in old alcoholics. It is not unknown in England. Quinine is also recognized as a hemolytic agent in certain sensitized subjects. All these factors were absent in the cases under review.

Reviews

[illegible]

[illegible] as an [illegible] to the [illegible] strikes a nice [illegible] [illegible] comparat[illegible] [illegible] There is [illegible] [illegible] book [illegible] [illegible] of [illegible] graphy might [illegible] be omitted [illegible] chapter [illegible] illustrations which [illegible] wide range of subject [illegible]

[illegible] Lewis [illegible]

[illegible] experience [illegible] subject [illegible] then [illegible] The [illegible]

[illegible] 1948 Edinburgh [illegible] sections [illegible] (3) abdomen 44 plates [illegible] (4) [illegible] upper limb 42 plates [illegible] (7) [illegible]

[illegible] plates constitute a most [illegible] or it can be taken [illegible] sections are perhaps [illegible] be detached [illegible] [illegible]

[illegible] 1949 29 72)

[illegible] By D Curran and E Guttmann [illegible] Illustrations Edinburgh Livingstone [illegible]

[illegible] *Journal of the Royal Naval M*[illegible] [illegible] is an index of its value [illegible] war psychiatry [illegible] The authors [illegible] the subject [illegible]

[illegible] best of American and [illegible]

[illegible]

[illegible] Nelson Price [illegible]

[illegible] the younger [illegible]

[illegible]

James Burres Stewart [illegible] Pp 380

[illegible] Armil Price [illegible]

[illegible] get at new [illegible] books [illegible] want to find [illegible] he have thought the [illegible] work which appeared in 1906 and [illegible] with editions [illegible] of the most [illegible] its popularity [illegible] easily [illegible] man in [illegible] to anyone [illegible] many [illegible] stations [illegible] author [illegible] Pp 113 We note that [illegible] has been [illegible] encroach [illegible] classic [illegible] respects there [illegible] opinion of the religious [illegible] appear [illegible] but belongs to Order [illegible] but with [illegible]

Correspondence.

TROPICAL PEMPHIGUS

TO THE EDITORS OF THE JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE

SIRS—With reference to the interesting account of tropical pemphigus published by Surgeon Lieutenant A M Robertson R N V R in the Journal (October 1945 31 259) readers might be interested in the account of an epidemic which occurred in H M S *Iroquois* on the China Station in 1898 when I was S M O The following is taken from the Statistical Report of the Health of the Navy 1900

The medical officer of the *Iroquois* gives an account of an interesting series of twenty one cases of *pemphigus contagiosus* The affection prevailed amongst both officers and crew It appeared shortly after leaving Perim on the 28th July and continued till the middle of October when the ship was at Hong Kong He remarks Pemphigus contagiosus which appears to have been first named and described by Manson is a non febrile highly contagious skin disease peculiar to damp tropical climates Its characteristic lesion is the formation of groups of pearl like vesicles in various parts of the body especially the axilla crutch lower part of the abdomen and thighs occasionally on the face neck and back The vesicle commences as a minute papule and for a short time after its full formation remains as a beautifully pellucid tense and shining bleb its serous contents however soon became turbid and the blister flaccid and dull the opaque white contained fluid gravitating to its lowest part Finally from friction of the clothes or otherwise the vesicle bursts and leaves a raw surface somewhat resembling a superficial burn Dr Manson states that he had found a diplococcus in connection with this disease but he gives no description of the micro-organism I made an attempt to isolate the specific organism Cover glass preparations were made of the contents of a vesicle stained with Löffler's methylene blue solution and examined under the $\frac{1}{12}$-in oil immersion of the microscope Amongst the many groups of staphylococci seen a conspicuous diplococcus stood out resembling in size and appearance the gonococcus of Neisser The two elements were kidney shaped and separated by a clear unstained interval An attempt was then made to isolate this organism by cultivation on the potato Two potatoes were well scrubbed in 1 in 20 carbolic solution for a few minutes and then thoroughly steamed in the steam sterliser for twenty minutes A flat bottomed enamelled basin was thoroughly washed in carbolic solution as well as a glass plate to cover it over and the bottom of the basin was lined with layers of blotting paper soaked in a 1 in 20 carbolic acid solution The potatoes having been removed from the sterliser with a clean knife which had been passed through the flame of a spirit lamp they were divided longitudinally carefully introduced into the basin beneath the glass plate and the two halves allowed to drop apart on the blotting paper When cold a vesicle on the abdomen of a patient suffering from pemphigus contagiosus was pricked and a minute drop of the turbid

Staff Surgeon Addison Thorpe

fluid contained [illegible] which had been passed through the flame [illegible] spread on the cut surface [illegible] sterilised potato which was rubbed well [illegible] from the basin [illegible] To this potato a small portion [illegible] surface was taken and [illegible] second half and in the [illegible] from the surface of the second [illegible] third to the fourth. The tubes and their contents were then carefully [illegible] drawer. On the third day a translucent pellicle while or waxy [illegible] taken place in the cultures of the potatoes, most abundant on [illegible] in the fourth where it existed chiefly as minute greyish white [illegible] minute dots was taken up carefully on the point of a needle [illegible] the flame, mixed with distilled water on the surface of a hanging [illegible] and with Neisser's methylene blue solution. The growth was found [illegible] the spirillum very [illegible] and resembling the gum [illegible]

Cultures were [illegible] until two or three weeks afterwards when [illegible] the growth [illegible] However such a solidity did [illegible] This [illegible] and the usual diminution in virulence. Some other cultures [illegible] experiments I hear that Mr. [illegible] at Manila [illegible] organism from the [illegible] and that in [illegible] hands. The [illegible] organism isolated in Malta [illegible] myself. Surgeon Lieut. W. Macnamara [illegible] *plague* [illegible]

[illegible] washing the parts [illegible] the application of dilute [illegible] powders of sulphur, boric acid, zinc [illegible] failed conspicuously [illegible] On the third day [illegible] with resorcin (gr. x to [illegible] the first remedy in *plague contagion* [illegible] after the scabs had been bathed [illegible] sodium [illegible]

Yours faithfully,

VINCENT G. HARRIS,

Surgeon Lieut.-Colonel (Retd.)

News of the Service

OBITUARY

We [illegible] which have reached us since the last issue of the Journal [illegible] sympathy [illegible]

Surgeon Rear-Admiral (retd.) C. W. C. MacB. CMG died on January 10, 1946, at Chislehurst. [illegible] temporary home after being bombed out of his flat in London. Admitted [illegible] 1881, the range of his subsequent activities and interests made [illegible] of the Navy during the past fifty eventful years. During [illegible] years fully realised that this study [illegible] in fact [illegible] 21 1877 his mental alertness and physical vigour belied [illegible]

[illegible] Welsh Hill-man was educated in Scotland. In 1894 he graduated [illegible] MB, CM at two [illegible] in the Service. He was in action in the China [illegible] in despatches and awarded a medal; subsequently recommended, accelerated [illegible] In 1902 he married Albert Blane, [illegible] awarded at that time for the best [illegible] medal. During 1914-18 war he served in the Battleship [illegible] Cruiser *Talbot* with the Mediterranean Fleet and as SMO. The Hospital Ship [illegible] despatches and was created a CMG. After the war he served first [illegible] Central 1919-21 and then for a period at Haslar. His last appointment for [illegible] Inspector-General in 1927 was as Medical Officer in Charge of the RN Hospital [illegible] he was appointed Commissioner of the Board of Control for England and Wales [illegible] 1938 in this year he also retired from his appointment as Honorary Surgeon to [illegible] for thirteen years.

[illegible] Medical Department in India, he represented the Naval Medical Service on the Council of the [illegible] Welfare Fund since 1912, in which year he supported and assisted

[illegible] Chairman the Central Council [illegible] Secretary and [illegible] a member of the Medical [illegible] RN [illegible] Medical Branches [illegible] 1911 [illegible] 1942-43 [illegible] of Malta [illegible] Surgeon Captain M. H. Knapp writes: [illegible] the coal. The Services generally [illegible] Admiral Sir Reginald Hall. [illegible] Medical Staff writes: [illegible] Admiral Sir Reginald Hall [illegible] has been produced to serve under [illegible] understanding, as [illegible] appreciated. Our sympathy is extended [illegible] Mr [illegible] Fitzhugh.

SURGEON C[illegible] in 1871, qualified at Edinburgh in 1896, spent [illegible] period. His [illegible] Order [illegible] Star in—an class with [illegible] by the Russians [illegible] ordered in the Baltic [illegible] In December 1918 he was [illegible] RN Barracks Chatham and was subsequently [illegible] on the retired list [illegible] Surgeon Captain in January 1924.

SURGEON [illegible] RN, born 1878, qualified at Dublin [illegible] joined the R[illegible] 1912. He [illegible] a large number [illegible] appointments including, then [illegible] Medical Officer [illegible] HMS *Queen Elizabeth* in 1927. He was a very popular [illegible] officer [illegible] He was one with whom he came in contact. He died in [illegible] 1935.

SURGEON CAPTAIN [illegible] RN, born 1880, qualified at St. Mary's Hospital, MRCS [illegible] 1904. During his twenty-one years naval service he held appointments in Malta [illegible] His last appointment on the active list was HMS [illegible] until with the rank of Surgeon Captain in September 1924. His death [illegible].

SURGEON [illegible] RN, retired, died at Bexhill, Sussex, on December [illegible] 1945, aged 76. He was the son of William Miller [illegible] and was educated at Stroud [illegible] School and at Liverpool University. He qualified in MB CH Aberd in 1893. After serving as House Surgeon at the Royal Infirmary [illegible] he entered the Medical service of the Royal Navy and retired in 1920 with the rank [illegible].

SURGEON REAR ADMIRAL [illegible] RN, born 1878, qualified MRCS LRCP and joined the Royal Navy in 1907. He served [illegible] in the retired list [illegible] in 1931. During 1914-[illegible] *Orion* [illegible] World War I [illegible] RN [illegible].

[illegible] married [illegible] a short time [illegible] Southsea [illegible] served with me at Haslar [illegible] Pathologist [illegible] was very keen on his work and [illegible] and in addition [illegible] Time.

HONOURS

OBE

Surgeon Commander W. M. D. Macgregor, *OBE*, [illegible]

Mentioned in Despatches

Surgeon Lieutenant Commander [illegible] RN
Temporary Surgeon Lieutenant [illegible] RNVR
Temporary Surgeon Lieutenant [illegible] RNVR
Temporary Surgeon Lieutenant [illegible] RNVR

Foreign Decorations

Surgeon [illegible] Wakeley awarded Legion of Merit [illegible]

Surgeon [illegible] RNVR, awarded Czechoslovak Medal of Merit 1st Class

RNVR Officers Deceased

Surgeon [illegible] R. B. Bennett RNVR

Surgeon [illegible] H. Hutchinson RNVR

Surgeon [illegible] R. D. Jenkins RNVR

[illegible] R. H. Ives RNVR

[illegible] E. M. Lewis RNVR

Commander [illegible] RNVR

[illegible]ler R. W. H. [illegible] RNVR

[illegible] retired [illegible] not deceased [illegible]

[illegible]m Commander [illegible] Royal Navy RNVR

PROMOTIONS

[illegible] Major H. S. C. Colin *CBE* MB BS [illegible] to be Surgeon Vice Vice Admiral on [illegible] Medical Department of the Navy to date January 1 1946

[illegible] J. V. Mears *KCB CMG OBE* MD BCh FRCS[E] to be Surgeon [illegible] (D) January 1 1946

[illegible] (Surgeon Captain) F. C. Allum to be Surgeon Captain (D) February 2 1946

Lieutenant Commander [illegible] Miles MRCS LRCP to be Surgeon Commander 194a [illegible]

Lieutenant Commander S. C. Franklin MB FRCS FRCP to be Surgeon Commander [illegible] 1946

Lieutenant H. P. Watson MB ChB to be Surgeon Lieutenant Commander December 8 [illegible]

Lieutenant J. C. Wyatt MRCS LRCP to be Surgeon Lieutenant Commander August 16 [illegible]

APPOINTMENT

Captain (D) J. T. Wood LDS RN to be Deputy Director General for Dental Services [illegible] 1946

RETIREMENTS &c.

Vice Admiral Sir Sheldon T. Dudley *KCB OBE* FRCS MD BS FRCP DPH [illegible] retired list on the rank of Surgeon Vice Admiral (Retired) January 1 1946 and [illegible] RN Hospital Bermuda January 1 1946 (on a PMO and SHO) retired on the rank [illegible]

Vice Admiral (D) T. F. Fletcher *CBE* LDS retired on a pension regulation granted [illegible] Surgeon Rear Admiral (D) February 6 1946

[illegible] R. A. Clark Hall MRCS LRCP retired from the list January 19 1946

[illegible] J. Lawrence *GBE* LDS invalided retired list March 16 1946

[illegible] J. S. L. Hall LDS reverts to retired list March 20 1946

[illegible] Commander (Emergy) W. V. Owen MRCS LRCP reverted to Emergency [illegible] 1946

[illegible] Commander (Emergy) H. C. Singer MRCS LRCP invalided to Emergency [illegible]

[illegible] Commander A. F. Cox appointment terminated February 13 1946 placed on [illegible] February 14 1946

[illegible] Commander (Emergy) S. T. A. Clarke MB reverted to Emergency List [illegible]

[illegible] (Emergy) S. F. Gaskin MB ChB retired to Emergency List Jan[illegible]

[illegible] (Emergy) I. A. Cassill MB ChB reverted to Emergency List January [illegible]

[illegible] (Emergy) C. D. Stevenson MB BCh reverted to Emergency List February [illegible]

[illegible] (Emergy) H. J. O'Reilly MB BCh reverted to Emergency List February [illegible]

Surgeon Lieutenant Commander (Emergy) T. J. Montgomery MB ChB MRCS LRCP [illegible] March 8 1946

Surgeon Lieutenant Commander (Emergy) J. I. Hughes MRCS LRCP reverts to Emergency List February 22 1946

Surgeon Lieutenant Commander H. M. Parkwood MRCS LRCP reverts to Emergency List January [illegible] 1946

[illegible] Energy) D. L. Ridout [illegible]

[illegible] (Energy) F. B. Copeland [illegible]

[illegible] (Energy) F. C. Cruickshank [illegible]

[illegible] Energy) J. R. Holmes [illegible]

[illegible] Energy) J. B. Mott [illegible]

[illegible] A. K. Hilton [illegible]

[illegible] W. Wall [illegible]

[illegible] S. L. Hartman, D.S.C. [illegible]

ROYAL NAVAL VOLUNTEER RESERVE

PROMOTIONS

[illegible] Lieutenant Commander J. M. Gillespie to be Temporary [illegible]

[illegible] Lieutenant Commander D. S. Macphail [illegible] 28 1945

[illegible] Lieutenant Commander A. C. Pilkington [illegible] 31 1945

[illegible] Lieutenant Commander C. J. Murray [illegible]

[illegible] Lieutenant Commanders H. V. Lasell [illegible] W. V. [illegible] be Temporary [illegible] Commanders November 9 1945

[illegible] Lieutenant Commanders J. R. Burns, V.C. [illegible] H. R. [illegible] Line M. J. Low, V.C. R. Yates, D.F.C. [illegible] W. H. [illegible] S. [illegible] 1945

[illegible] Lieutenant Commander E. C. Jeffery, R.D. [illegible] Lieutenant Commander D. Dunlop, S.D.[illegible] Temporary [illegible] Lieutenant Commanders November 7 1945

[illegible] Lieutenant Commanders H. R. Brick, V.R. [illegible] W. Ker [illegible] Temporary Lieutenant Commanders December 1 1945

[illegible] Lieutenant Commander H. H. Martin, S.M.[illegible] Temporary Surgeon Lieutenant Commander [illegible] Surgeon [illegible] 7 1945

Temporary [illegible] Lieutenant J. N. Murray [illegible] Commander [illegible] 4

Temporary [illegible] Commander R. N. Martin [illegible] Commander [illegible] 1945

Temporary [illegible] Commander H. H. Robertson [illegible] Commander [illegible]

Temporary [illegible] Commander D. W. J. Stuart [illegible] Temporary [illegible] November 1 1945

Temporary [illegible] Lieutenant R. R. V. H. [illegible] Lieutenant [illegible] 12 1945

Temporary [illegible] Commander [illegible] Lieutenant Commander [illegible] 1945

Acting [illegible] Lieutenant [illegible] M. Martin [illegible] be Temporary [illegible] 5 1946

Temporary [illegible] Temporary Surgeon Lieutenant Commander [illegible] 1945

Temporary [illegible] M. [illegible] R. [illegible] be Temporary Surgeon Lieutenant [illegible] November 29 1945

Temporary Surgeon Lieutenant R. R. [illegible] V.R. [illegible] December 8 1945

Temporary [illegible] Lieutenant [illegible] 1945

Temporary [illegible] Lieutenant [illegible] December 22 1945

Temporary Surgeon Lieutenant H. W. [illegible] be Temporary Surgeon Lieutenant [illegible] January 1 1946

Temporary Surgeon Lieutenant B. Robinson to be Temporary Surgeon Lieutenant Commander January 5 1946

RETIREMENTS &c

[illegible] Stratford placed on the [illegible] 1945

[illegible] K Sargeanson appointment ter[illegible] April 8 1916

[illegible] Commander T S Linnell D S C temporary commission terminated [illegible]

[illegible] Lieutenant Commander R T C Evans temporary commission terminated [illegible]

[illegible] Lieutenant Commander R Woolconcroft temporary commission terminated [illegible] 18 1946

[illegible] Lieutenant-Commander (H) R N Chapman temporary commission terminated April 24 1946

[illegible] E F Jones temporary commission terminated medically unfit April 2 [illegible]

[illegible] Lieutenant C T A James temporary commission terminated medically unfit [illegible] 1946

[illegible] Lieutenant L D McLaunay temporary commission terminated medically unfit [illegible]

JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE

Balance Sheet 1945

Assets	£	s	d
[illegible] Bank December 31 1945	851	14	5
[illegible] Trading Stock	100	0	0
£600 3½% War Loan	600	0	0
Subscriptions in Arrears	14	0	0
	£1 565	14	5

Liabilities	£	s	d
Bale and Staples	179	10	8
Balance Creditor	1 386	3	9
	£1 565	14	5

I assented at the Annual Meeting of the Management Committee held on February 3 1946

(Sgd.) MACDONALD CRICHTLEY
Surgeon Captain R N (R)

(Sgd.) A HAYWARD HARKINS
Surgeon Captain R N

NAVAL MEDICAL COMPASSIONATE FUND

Account of Receipts and Payments for the Year ended December 31 1945

	£ s d	£ s d
Balance at Bank on January 1 1945 —		
Current Account	718 18 5	
Deposit Account	107 18 9	
		824 17 2
Dividend on 2½% Consolidated Stock	265 0 0	
Interest on 3½% Conversion Stock	68 10 0	
Interest on 4% Consolidated Stock	40 0 0	
Interest on 3½% War Stock	35 0 0	
		406 10 0
Donations		10 5 0
Subscriptions		204 15 0
Grant from King George's Fund for Sailors		300 0 0
Interest on Deposit Account		10 7
		£1 746 17 9

	£ s d	£ s d
Awards to Widows and Orphans		700 0 0
Secretary's Allowance		18 0 0
Auditors		1 1 0
Cheque Book		8 0
Purchase of £400 3% Defence Bonds		400 0 0
Balance at Bank on December 31 1945 —		
Current Account	512 19 5	
Deposit Account	108 9 4	
		621 8 9
		£1 746 17 9

I certify that I have examined the above Receipts and Payments Account and found it to be correct in accordance with the books and records of the Fund and that all my requirements as Auditor have been met.

A certificate of the Stocks standing at the Bank of England in the name of the Trustees on December 31 1945 as detailed herein is attached.

The following is a reconciliation between the balance at Bank on Current Account shown above and the balance shown in the attached certificate from the National Provincial Bank Ltd

	£ s d
Balance as per Certificate	512 19 5
Deduct cheques for special Awards drawn before December 31 1945 not presented to the Bank by that date	20 0 0
Balance shown above	£512 19 5

N.B.—Balance of £512 19s 5d includes the annual £5 5s awarding [illegible] Donation Fund.

Subscriptions to the amount of £26 5s 0d were outstanding at December 31 1945 as follows —

	£ s d
1944	6 6 0
1945	19 19 0
	£26 5 0

(Sgd.) WM. C. McNICOL,
Chartered Accountant Auditor

In addition to the above Cash Balance and £400 3% Defence Bonds Stock to the following amounts were standing, at the close of the Accounts, at the Bank of England in the names of the Trustees, viz. —

*	£10 600	2½% Consolidated Stock
	£1 000	3½% Conversion Stock
†	£1 000	4% Consolidated Stock
	£1 000	3½% War Stock

* Original Fund under Clause 5 of the Order in Council of July 28 1915

† Invested out of accumulated interest and subscriptions

(Sgd.) C. V. GRIFFITHS
Surgeon Rear Admiral
Honorary Treasurer

January 31 1946

Notice

The Editors invite Medical Officers to send Original Papers on professional subjects travel, personal experiences &c Items of news and matters of interest to the Naval Medical Service will be welcomed from ships and establishments on home and foreign stations

All Articles or Communications published in the JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE will become the property of the Journal with full copyright powers unless the author declines when sending the Article that he desires to reserve the copyright to himself

All Communications should reach the Editors on or before the First of the Month preceding the date of issue Unless clearly written, they should be typed in order to avoid mistakes, and they should be addressed to the Editors, JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE, Royal Naval Hospital Barrow Gurney near Bristol and not to Royal Naval Hospital, Haslar Gosport

The JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE is published quarterly, four numbers comprising one volume.

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The payment of subscriptions by Banker's Order is recommended as it relieves the Subscriber of the necessity of forwarding a cheque each year and simplifies the keeping of accounts

Journal

of the

Royal Naval Medical Service.

ERRATA

NERVE REGENERATION JULY 1946

Pp 65 67 70, 71 *for* musculo spiral *read* radial

P 64 line 16 *date should read* 15 2 43 *not* 14 2 43

[illegible]

The hyperesthetic area extended from a point approximately [illegible] dorsum of the hand [illegible] The base of the thumb and [illegible] index and middle fingers. Anywhere in this area except at one point [illegible] was excessively painful and caused a sensation [illegible] pricking [illegible] the point of stimulation was painful. There was hyperesthesia [illegible] over the dorsum of the hand and thumb which was entirely [illegible] The exact extent of this totally insensitive island [illegible] skin was not observed.

The zone of hyperesthesia decreased in size and [illegible] about [illegible] defined area of complete [illegible] extending on to the dorsum of the forearm and communicating with the [illegible] stump of skin which although insensitive to light touch responded [illegible] At some points in this area the prick of a pin felt blunted but [illegible] stimulation could be [illegible]

8 1 43 (28) Sensory examination revealed the following the [illegible]
(1) Hands insensitive to [illegible] light touch [illegible]
(2) With the hand [illegible] there was no response to pin prick light touch temperature [illegible] point [illegible]

In addition it was noted that there was [illegible] of deep pressure [illegible]

6.2 43 (57) [illegible] This produced a completely insensitive strip of skin [illegible] with the totally insensitive area on the hand and [illegible] of the forearm (see [illegible] Part I of this paper [illegible] 1946 32 pp 63 and 64)

27 9 43 (290) (233) Return of sweating in the [illegible]

27 10 43 (320) (263) Sensory examination revealed [illegible]

11 12 43 (365) (308) one year from wounding [illegible]

Part I appeared in the April 1946 issue

Journal

of the

Royal Naval Medical Service.

Articles.

NERVE REGENERATION. OBSERVATIONS ON MOTOR AND SENSORY RECOVERY IN A CASE OF INJURY TO THE RADIAL NERVE

By Surgeon Lieutenant A. [illegible] TOUR MALLETT, *D.S.C., R.N.V.R.*

PART II[1]

SUMMARY OF SENSORY PHENOMENA OBSERVED BETWEEN DECEMBER 11, 1942 (0) AND DECEMBER 11, 1943 (365) (308)

11.12.42 (0). eight hours after wounding. Hyperæsthesia: pin prick over the dorsum of the hand on its radial aspect.

13.12.42 (2). Marked hyperæsthesia over radial aspect of the back of the hand and lower part of the forearm. The hyperæsthetic area extended from wrist upwards approximately one third of the way up the dorsum of the forearm to the base of the thumb nail and to the proximal interphalangeal joints of the index and middle fingers. Anywhere in this area, except at one point, the application of a pin was excessively painful and caused a sensation of pricking, with diffusion and irradiation. The maximum of the point of stimulation was poor. There was lower extension of island of skin which this area and situated over the dorsum of the hand and thumb, which was entirely insensitive to both pin prick and light touch. The exact extent of this totally insensitive island of skin was not observed.

The zone of hyperæsthesia increased in size until on about December 31, 1942 (20) there was a sharply defined area of complete sensory loss to pin prick and light touch. It was then found however that extending from the dorsum of the forearm and terminating with the complete loss was a narrow area which although insensitive to light touch responded to pin prick in a manner similar to normal skin. At some points in this area the prick of a pin felt blunted but at others no response to the first stimulation could be obtained.

8.1.43 (28). Sensory examination recorded the following: (1) Hairs insensitive to manipulation with forceps in the light and less painful when touched with a camel's hair brush and (2) With the hand held at rest there was no response to pin prick. Light touch temporal to 70 C. on the back of the palm. Discrimination.

In addition it was noted that there was (1) Normal fibrillation in the palm and some (thenar) (2) Improvement of deep pressure sense and (3) Anæsthesia.

6.2.43 (57). Electrocutaneous nerve. Electrical point and sensory nerve. [illegible] This procedure completely insensitive to stimulation. Skin in the area of the dorsum of the hand and forearm, especially with the pain insensitive area in the hand. The area, the forearm, the skin [illegible] the dorsum of the forearm (see figs. 1 and 2 in Part I of the paper of Surgeon Rear-Admiral Sir [illegible] 1946, 32, pp. 63 and 64).

27.9.43 (290) (233). Relapsing sweating, more but less in small of thumb and

27.10.43 (320) (263). Sensory examination recorded the same as on 8.1.43 (28).

11.12.43 (365) (308)—one year from wounding. Sensory examination: the skin area in palm of the

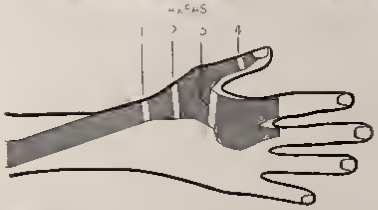
[1] Part I appeared in the April 1946 issue.

[illegible] insensitive [illegible] painful [illegible] There was [illegible] [illegible] light touch [illegible]

[illegible] STUDIES

[illegible] the sensory [illegible] tion was [illegible] [illegible] ters (1, 2, 3 and 4) [illegible] [illegible] quidistant [illegible] [illegible] servations were [illegible] points situated wide [illegible]

It must be stressed [illegible] above are [illegible] the complete cutaneous [illegible] tion of the [illegible] in the sensory qualities of [illegible] strip of skin extending [illegible] the forearm which [illegible] of an esthesia [illegible] the posterior cutaneous [illegible] preparation are described [illegible]



[illegible] (Diagrammatic).—To illustrate the four areas to which sensory observations were [illegible] Areas 1 [illegible] the level of the radial styloid and areas 2, 3 and 4 be approximately [illegible] normal.

The following aspects of sensation were selected for investigation: (1) The hairs (a) Manipulation of the hairs by pulling them with forceps and (b) Stimulation of the hairs with a camel hair paint brush. With the skin shaved—(2) The response to pain (pin-prick) (3) The response to light touch with a camel hair paint brush. (4) Temperature sensibility (5) Two point discrimination with the compass points separated at 2 cm.

The results of testing each of the five aspects of sensation selected for study are presented separately.

(1) *The [illegible] of the response of the hairs to manipulation with forceps and to light touch with a camel hair paint brush remained the same [illegible] the intensity of the responses lessened with the passage of time*

(*a*) *Manipulation with Forceps*

6.2.44 (422) (365)—*one year after secondary nerve suture*

Pulling individual hairs caused pain of an excessively unpleasant [illegible] and sickening quality. Associated with the pain was a feeling of [illegible] some diffusion.

There was remarkable radiation of the pricking sensation (Table IX).

TABLE IX.—EXTENT OF RADIATION FOLLOWING HAIR MANIPULATION [illegible]

Area in which hair pulled	*Radiation*
1	Dorsum of [illegible] phalanx [illegible] interdigital [illegible]
2	[illegible] proximal [illegible] [illegible]
3	Middle [illegible] [illegible]
4	(No [illegible])

In no case was the point to which the hair was pulled stimulated [illegible] supplied by the radial nerve.

There was a noticeable delay between the application of the stimulus [illegible] subsequent onset of pain and the pain continued for a [illegible] after the stimulus.

Manipulation of hairs was carried out on the following [illegible] 28.3.44 (1[illegible]) (416), 31.5.44 (532) (480), 15.8.44 (613) (556), 12.10.44 (6[illegible]) (61[illegible]).

Qualitatively on these dates the results were [illegible] those already described but quantitatively there was a progressive diminution in the intensity of the sensations elicited—pain, pricking, diffusion and radiation [illegible] less pronounced with the passage of time.

Observations as regards radiation were made on each of the three dates, as stated. It is not considered that the details of these five observations were sufficient interest to be included but, as an example of the results obtained, the findings on August 15, 1944 (613) (556) were as follows:—

TABLE X.—EXTENT OF RADIATION FOLLOWING HAIR MANIPULATION WITH FORCEPS 15.8.44 (613) (556)

Area in which hair pulled	*Radiation*
1	Terminal phalanx [illegible]
2	Over metacarpal phalanx [illegible]
3	Midway between [illegible] interphalangeal [illegible]
4	(No [illegible])

(*b*) *Stimulation with Camel hair Paint brush*

6.2.44 (422) (365)—*one year after secondary nerve suture*

Investigations were carried out on the same dates as on those for hair manipulation.

On February 6, 1944 (422) (365) stimulation of hairs with a camel hair paint brush caused a local "tingling" sensation which diffused very much more widely than was the case when the hairs were manipulated with forceps. The sensation was essentially one of tingling rather than of pricking and at times amounted to irritation. Localization of the point of stimulation was reasonably accurate. Radiation was more pronounced than was the case when the hairs were manipulated with forceps, possibly because more than a single hair was stimulated at a time.

[illegible]

[illegible]

28 [illegible]

[illegible] gradually became less pro-[illegible]

[illegible] the affected area of the [illegible] the area was found to be [illegible] perception of pin prick was [illegible] could be found within the [illegible] pin produced the same [illegible] all the eyes closed it was [illegible] examinations were carried [illegible] quantitative diminution [illegible]

[illegible] restoration the return of [illegible] The method of testing [illegible] it was possible to distinguish [illegible] relatively unimpaired.

[illegible] was an extremely important fact [illegible] diminishing tactile sensibility was [illegible] the hand was warm when test[illegible]

Ob[illegible] the hand shaved but it is poli[illegible] tive hair was sufficient to [illegible] tactual fact insensitive to light [illegible] accompanying hair [illegible] and its subsequent [illegible]

[illegible] 12 2 44 (498) (571) 4 4 44 (480) [illegible] 10 10 44 (671) (614)

[illegible] within the abnormal sensory area [illegible]

[illegible] sensitive to light touch was present [illegible] the most proximal point to which [illegible] the topographical point of the [illegible] skin was started in or the inter[illegible] tripod sensitive skin immediately [illegible] As has been noted

[illegible] and [illegible] Likely explanation was the [illegible] fibres [illegible]

On April 4, 1941 (584) 12 of the [illegible] Islands [illegible] February 12, 1944 [illegible] and finally [illegible] phalangeal joint of the index finger.

On June 6, 1944 (543) (486) all the [illegible] had [illegible] over the inter phalangeal joint of the thumb [illegible] with the [illegible] the base of the thumb nail.

On August 22, 1944 (620) (563) all the [illegible] had [illegible] had appeared on the metacarpo phalangeal joint of the middle finger.

On October 12, 1944 (671) (614) the whole of the skin [illegible] (*i.e. till*) anæsthetic following division of the radial nerve [illegible] As regards the qualitative aspect of sensibility to light touch [illegible] that even when the whole skin area under consideration [illegible] of the sensation remained abnormal. The sensation elicited [illegible] tickling of slight intensity. There was some diffusion and the [illegible] which was minimal or more often absent.

It was normal when sensibility to light touch had [illegible] sensation with a single bristle of medium stiffness [illegible] the whole area of altered sensibility [illegible] being touched at a single point [illegible] there being no local appreciation of touch [illegible] yielded a local sensation as well.

(4) *Temperature Sensation.* Accuracy [illegible] skin is difficult and various factors [illegible] elicited depends on the temperature of the [illegible] warmed and the other cold. I [illegible] the warm hand and hot to the cold. It is [illegible] area being held to be constant [illegible] as far as possible by correct marking, [illegible] and objectively.

Nomenclature must necessarily be [illegible] feels hot to one observer may [illegible] following series of observations [illegible] 10 degree ranges of temperature from 70° [illegible] the normal hand. The results of such [illegible]

TABLE XIII. [illegible]

Temperature Degrees F.	[illegible]
70	[illegible]
60	[illegible]
50	[illegible]
40	[illegible]
30	[illegible]
20	Very [illegible]
10	[illegible]
0	Very [illegible]

While the abnormal hand [illegible] temperatures was [illegible]

The investigations were [illegible] the spectral temperatures and [illegible] to areas 1, 2, 3 and 4. Routine observations were made on the following dates: 22.2.41 (438) (381); 16.4.44 (492) (435); 8.7.44 (575) (518); 10.9.44 (609) (581); [illegible] (618).

The results obtained are shown in fig. 18.

Number of days from secondary suture

	Area 1						Area 2						Area 3						Area 4				
		361	435	518	582	618	361	435	518	582	618	361	435	518	582	618	361	435	518	582	618
70	VHU	VHU	VHU	VHU	VHU	VHU	VHU	VHU	VHU	VHU	VHU	VHU	VHU	VHU	VHU	VHU	VHU	VHU	VHU	VHU	VHU
60	HB	VW	HB	HB	HB	HB	W	VW	HB	HB	HB		VW	VW	HB	HB	VW	HB	HB	HB	HB
50	VW	W	VW	VW	VW	VW		W	VW	VW	VW				VW	VW	W	VW	VW	VW	VW
40	W			W	W	W			W	W	W					W		W	W	W	W
31	Cool			Cool	Cool	Cool			Cool	Cool	Cool					Cool		Cool	Cool	Cool	Cool
20	V Cool	Cold	V Cool	V Cool	V Cool	V Cool	Cold	Cold	V Cool	V Cool	V Cool	Cold	Cold	Cold	V Cool	V Cool	Cold	V Cool	V Cool	V Cool	V Cold
10	Cold	V Cold	Cold	Cold	Cold	Cold	V Cold	V Cold	Cold	Cold	Cold	V Cold	V Cold	V Cold	Cold	Cold	Cold	Cold	Cold	Cold	Cold
0	V Cold	V Cold	V Cold	V Cold	V Cold	V Cold	V Cold	V Cold	V Cold	V Cold	V Cold	Cold	Cold	V Cold	V Cold	V Cold	V Cold	V Cold	V Cold	V Cold	V Cold

Correct temperature assessment

Temperature appreciated but assessment incorrect

No appreciation of Temperature

[illegible] were noticeable at the lower temperatures ([illegible] 20° C) [illegible] temperatures became equally [illegible] the upper [illegible] 60 and 70° [illegible] normal [illegible] in which [illegible] a vessel [illegible] there was the [illegible] included in [illegible] was applied [illegible]

[illegible] the suggestion regarding [illegible] compass points (Weber [illegible]) [illegible] 11·4·44 (430) (374) 19·4·44 (495) (438) 26·6·44 [illegible] (588) [illegible] (478).

[illegible] found in cases 1, 2 and 3 only, with [illegible] of the hand.

[illegible] point was often mistaken [illegible] The response [illegible] well. [illegible] each test [illegible] compass points at 2·0 cm [illegible] single and double point ten times [illegible] the number [illegible] that a single point was mistaken for two, or two points for one [illegible]. Errors in each case expressed as a percentage.

For example, on February 14, 1944 (430) (373) [illegible] in the manner described [illegible] applying a single compass point ten times it was mistaken on three [illegible] stimulus. The percentage error was therefore 30. In [illegible] points applied simultaneously [illegible] was mistaken for one [illegible]. The percentage errors for single and double points are recorded for this particular [illegible] as 30 and 40 respectively.

The results of testing cases 1, 2 and 3 on the dates specified are shown in Table XIV.

TABLE XIV.—PERCENTAGE ERROR FOR ONE AND TWO [illegible]

[illegible]	Case 1		Case 2		Case 3	
Date	1 pt.	2 pt.	1 pt.	2 pt.	1 pt.	2 pt.
11·11	[illegible]	[illegible]	50	20	[illegible]	[illegible]
1·4·44	20	6	30	41	[illegible]	11
8·4·44	[illegible]	[illegible]	30	[illegible]	[illegible]	11
11·8·44	11	[illegible]	10	[illegible]	[illegible]	10
11·[illegible]·44	[illegible]	[illegible]	30	[illegible]	[illegible]	20
Average percentage	14	[illegible]	34	[illegible]	41	14

Control tests were carried out on the normal hand in an area corresponding to area 2 and in no instance did a mistake occur.

DISCUSSION

Before proceeding to a discussion of the sensory phenomena which have been described in this [illegible] it is convenient and instructive to consider the results obtained by other investigators. Of these, Head and Rivers [1] on the one hand and Trotter and Davies on the other have made outstanding contributions, and their work, as well as that of others, has been critically reviewed by Walshe [2] from whose paper the following account is constructed.

(1) *Immediate Consequences of Nerve Section.*—According to Head and Rivers section of a cutaneous nerve produces an area of skin of altered sensibility with a sharply defined border. The skin within this area is insensible to cotton-wool, to [illegible] and to two-point discrimination. Within this area of altered sensibility, however, is a central area which is in addition insensitive to pain and to all grades of temperature. An intermediate zone lying between the central area and the outer margin of the entire area of abnormal sensibility remains sensitive to pain and to the extremes of temperature, although the sensations evoked by these stimuli are of an abnormal nature.

[illegible] deep pressure [illegible] tion is due to the [illegible] temperature sensation [illegible] temperatures within [illegible] range of 5° [illegible] They find that [illegible] the total unidifferent [illegible] sations appreciated [illegible] only warm in the hypoesthetic [illegible]

Hypoesthesia [illegible] Trotter and Davies has [illegible]

(1) *Multiple* [illegible] Woollard [illegible] in human skin [illegible]

(2) *Sensory* [illegible] nerves innervating a [illegible] of sensory overlap. They [illegible] width between the [illegible] pain fibres from two [illegible] of pain spots is reduced [illegible]

Thus after section [illegible] afferent in two ways [illegible] sectioned nerve will [illegible] partly by the sectioned [illegible] from the uninjured [illegible] zone (or zones) [illegible]

an explan[illegible] group of [illegible] is only gradually [illegible] of neural [illegible]

The Phenomena [illegible] occurring in the stages

1st stage [illegible] zone. This forms [illegible]

2nd stage [illegible] epicritic sensation [illegible]

Trotter and Davies [illegible] return of tactile [illegible] delayed. The remaining [illegible] the phenomena of [illegible] later

Theoretical

To explain the phenomena [illegible] system of cutaneous sensory [illegible] systems. However the [illegible] mechanisms. Trotter and Davies [illegible] the existence in the skin of two [illegible] Trotter and Davies fulfil [illegible] namely (1) the sensory [illegible]

[illegible] the intermediate zone with [illegible] [illegible] [illegible]

[illegible] the [illegible] peripheral nerve [illegible] sign was [illegible]

[illegible] abnormal [illegible] positions has [illegible] used paut [illegible] the grossly [illegible] in heat [illegible] except the [illegible] bility was [illegible]

[illegible] was an [illegible] stimulating [illegible] inverting [illegible] true [illegible] insulation [illegible] ral somatic [illegible] by Head is in [illegible] and organs in a [illegible]

[illegible] distinguished three [illegible] sensation and [illegible]

[illegible] to pin prick and [illegible] to manipulation [illegible] of hair [illegible]

[illegible] been totally [illegible] paint brush and to [illegible] occasion [illegible] throughout the [illegible] paint brush [illegible] and then [illegible]

[illegible] sensibility [illegible] that there [illegible] some [illegible] regarding [illegible] in this case [illegible] present on [illegible] sensibility [illegible] at any [illegible]

[illegible] paint- [illegible] the former [illegible] hairs was excessively [illegible] dition was a well [illegible] that the abnormal [illegible] such less marked as [illegible] the sh[illegible]

—Head [illegible] and stated [illegible] abnormal [illegible] sensation [illegible] but both appreca[illegible] abnormal [illegible]

[illegible] Davies [illegible] different nerves [illegible] distinct [illegible] modes of sensibility [illegible] with the theoretical grounds on which Head's conception of hyperalgesia were based [illegible] Ritter and Davies attributed the

by [illegible] the [illegible] cau[illegible]

[illegible] and [illegible] we[illegible] pain [illegible] (Chap. [illegible] parts [illegible] widsp[illegible] of a [illegible] vinke[illegible]

(4) [illegible] already [illegible] once [illegible] and o[illegible]

[illegible] was [illegible] diffusion [illegible] its point [illegible] discrimin[illegible]

Head and S[illegible] over the [illegible] parts and [illegible]

In this [illegible] could be [illegible] the sensati[illegible] Other point[illegible] this paper that [illegible] distribution that [illegible] fibres could explain th[illegible] Wood Jones 7 (p. 331) [illegible] alternat[illegible] sensory stimuli alter sens[illegible] but th[illegible] the same theory applies swit[illegible] and 9. However Trotter and Davis [illegible] reference to other factors which have [illegible]

(4) *Temperature Sensation.* From the [illegible] in this case that —

(1) The appreciation of extremes of t[illegible] mediate grades.

(2) If a particular degree of temperat[illegible] the tendency was to err on the side of co[illegible]

(3) If area of skin is limited [illegible] assessment returned to a more proximal [illegible]

(4) Areas in which the return of temperat[illegible] and qualitatively, although that in [illegible] lo skin supplied by the (ulnar) [illegible] of temperature sensation to this area [illegible] area of skin at the base of the thumb [illegible] this contention it is pertinent to note that [illegible] carried in skin immediately proximal to the thumb and [illegible] and Rivers in desertibus, the return of sensation after [illegible] the sulcus of the former is taken as [illegible] observed in the Stoll [illegible] appreciated except over the terminal phalanx of the thumb.

From the foregoing data the only stri[illegible] temporal relationship of temperature sensation [illegible] is this. That sensibility to the extremes [illegible] the shaved

[illegible] temperature [illegible] until [illegible] touch hair [illegible] temperature [illegible] in [illegible] in the [illegible] by after [illegible]

[illegible] the grossly [illegible] on this [illegible]

[illegible] of [illegible] when the [illegible] of [illegible] delayed. It [illegible] case [illegible] temperature [illegible] sensation of slight intensity [illegible] With temperatures of 60 and 70°C [illegible] pricking but radiation was [illegible]

[illegible] was appreciated but assessed [illegible] Head and Sherren (Chap. 16) [illegible] more coherently than [illegible] Thus at the cool end of [illegible] with this statement but [illegible] is inaccurately assessed [illegible]

[illegible] viling inhibition have [illegible] sensibility

[illegible] drawn [illegible] fibres —

[illegible] Head [illegible] by pin stimulus and by Treitler [illegible] turn of [illegible] Dawnsie contrasted [illegible] that [illegible] Dawnsie [illegible] the responses in this case [illegible] that the [illegible] of [illegible] ficient [illegible] the fact [illegible] too [illegible] stimulus at the extremity [illegible] to a lesser degree.

(3) [illegible] opinions regarding one and two point [illegible] fright [illegible] had in part [illegible] was carried out on October [illegible] 1944 (465) (308). With the skin [illegible] 1944 (465) (308). [illegible] to be appreciated [illegible] that this may have been the [illegible] 1944 [illegible] point has [illegible] that the tactile [illegible] sensibility [illegible] lower [illegible] point.

The [illegible] is [illegible] tactile [illegible] this is closely related [illegible] critic [illegible] point to two but in the [illegible] This was probably [illegible] of sensory [illegible]

recovery [illegible] by [illegible] divided [illegible]

The results [illegible] 1, 2 and 4 [illegible] and two point [illegible] that the

[illegible]

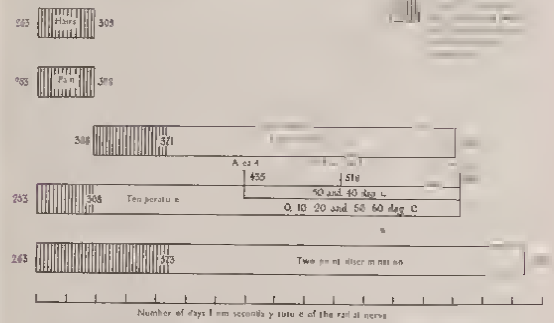


Fig. 11. Temporal relationship of the different forms of return [illegible]

(1) Hair sensibility and the appreciation of pin prick returned [illegible] loss between the 263rd day (when such forms of sensibility were universally [illegible] 308th day (when they were universally present).

(2) Temperature sensibility. (*a*) Sensibility to temperatures of 0, 10, 20 and 50° C. were first noticed to be present in areas 1, 2, 3 and 4 on the 308th day, but might have [illegible] at any time after the 263rd day. (*b*) Sensibility to temperatures of 40 and 40° C. [illegible] first to area 4 (435th day), then to areas 1 and 2 (510th day) and finally to area 3 (61[illegible]).

(3) Response to light touch was universally absent on the 308th day, but partial [illegible] appeared on the 371st day and was not universally present until the 614th day.

(4) Two point discrimination was first noticed to be present although defective on the 373rd day but might have returned at any time after the 263rd day. The degree of discrimination as tested in areas 1, 2 and 3 improved progressively but was still defective on the 673rd day.

The following [illegible] can be drawn

(1) Sensation [illegible] later than that to pain [illegible] and manipulation [illegible] temperature

(2) Sensation [illegible] temperature returned later than that of any of the other [illegible]

(3) Sensation [illegible] to the full range of the temperature scale became [illegible] approximately the same time (614th and 618th day respectively)

(4) Low [illegible] discrimination remained defective after other forms of sensation were [illegible]

[illegible] Motor and Sensory Recovery — Protopathic sensation was defined by Head as the ability to recognize pain (pin prick) manipulation and stimulation of hairs and some temperature [illegible] epicritic sensation as the ability to recognize in addition light [illegible] with the skin and intermediate degrees of temperature and the simultaneous application of two compass points. Head believed that these two components of sensation returned independently and were attributable to a dual system of afferent nerve fibres

(5) Grant and Gibson [illegible] however basing their argument on the theory of a distortion [illegible] that pain and touch sensory stimuli alter nerve suture believed that

[illegible] Did Head [illegible] as responsible for the return of epicritic regeneration [illegible] not [illegible] in the early stimuli of nerve centres

Another theory put forward by Brooks 8 and quoted by Wood Jones was that

[illegible] recovery in which imperfectly regenerated end-organs are acceptors [illegible] these end-organs are perfected

[illegible] that ribbon had support for the theory originated by Head of a dual [illegible] system in general and in this case, and on the motion side by the manner in [illegible] movement tested returned in the brachio radialis muscle. This has previously [illegible] but on its merits. Investigation of was found that in the case of this muscle [illegible] movement at first was only possible when an attempt was made to contract [illegible] simultaneously all the muscles both paralysed and unparalysed of the forearm At that time flexion of the elbow against resistance with the forearm held midway between [illegible] and pronation but not pronation the visible or palpable contraction of the brachio radialis which normally [illegible] was in this case lost. A theoretical explanation of this phenomenon given by Hunt has already been discussed and is briefly that motor fibres are of two kinds

(1) Fibres subserving coarse automatic and associated movements belonging to a more primitive (pallo kinetic) system and subserved by the corpus striatum and extra pyramidal [illegible]

(2) Fibres from the cortex constituting the pyramidal tracts (neo-kinetic system) and subserving fine associated synergic movements

Hunt believed that the thalamus was responsible for the appreciation of protopathic sensation and the corpus striatum for the initiation of primitive automatic and associated movements. He pointed out that these two structures are at the same physiological level of development. In a similar fashion he attributed to the cerebral cortex both the appreciation of epicritic sensations and the control of fine movements. In this case motor recovery at least so far as the brachio radialis was concerned occurred in two stages and it is an attractive theory to attribute this phenomenon attending motor recovery to the presence of a double system of motor fibres comparable to Head's "epicritic" and "protopathic" systems However in view of Trotter and Davies work Head's theories have had to be abandoned and it seems probable that the abnormal initial movement of a previously paralysed but recovering muscle is to be explained by some other mechanism than that of a dual motor system.

Summary

Part I [1]

A case of radial nerve paralysis is described which was the personal experience of the author Secondary suture 57 days after division of the nerve was followed by motor and sensory recovery Clinical observations were made over a period of 787 days following nerve division

The absence of pain at the moment of injury is noted and an attempt made to explain this on physiological grounds. The instantaneous paresthesia at the time of wounding, the delayed onset of pain and of paresthesia is noted and [illegible] of the elbow joint are described.

Tolliver's Tumour is described and its nature discussed.

The alleged responses of insensitive skin to injury, the appearance of pilomotor sweating in normal skin in and of the hand, and hunnishbil reflexes returning from the limb as a whole are described and attributed directly to underlying sympathetic paralysis.

The reappearance of voluntary power in the brachioradialis muscle is noted and its abnormal nature emphasized. The conception of an distinct motor systems is discussed.

The serial phenomenon of paralysed muscles is abnormal and in the consistence of a motor recovery, an attempt is made to discuss the actual relevance of functionally complete motor fibres. The conception of an anatomical physiological motor gap (neuro muscular delay) is put forward. Based on this reasoning based on limits such a curve is constructed to represent the balance of functionally complete motor and sensory nerve fibres. A comparison of these two curves affords an opportunity to discuss the temporal length of neuro muscular delay in this case.

The primary latent period and its relationship, [illegible] and secondary suture are discussed. The [illegible] of the latent period is discussed and the [illegible] of the saturated primary latent period is noted.

The electrical muscle reactions are [illegible]. The long period by which the return of voluntary movement in the brachioradialis muscle precedes that of the other muscles is emphasized. A method of electrical testing is suggested.

Incoordination of the [illegible] and attributed to [illegible] of motor fibres and [illegible] perception [illegible] sense.

Stiffness of the elbow joint is considered and discussed [illegible] and spasm of the biceps muscle.

The treatment of the case and the principles involved in this and in essential points in the construction of the radial splint stress [illegible].

Part II

Sensory phenomena between December 11, 1942 (10) and December 11, 1943 (365) (308) previously described in Part I are summarized. The results of routine sensory investigations undertaken between February 6, 1944 (422) (365) and December 11, 1944 (730) (673) are detailed. As a preliminary to the discussion the work of Trotter and Davies is briefly compared and contrasted with that of Head and Rivers. The immediate onset of hyperesthesia following nerve section is attributed to an abnormal condition of sensory end organs lying in a zone of sensory overlap. The phenomena of peripheral reference and intensification particularly with cold stimuli are confirmed. The return of sensation is discussed under three headings: (1) the hairs, (2) pain, (3) light touch, (4) temperature sensation and (5) two point discrimination.

Limited conclusions are drawn from the available data as to the temporal relationships of these aspects of returning sensibility.

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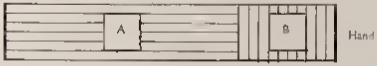
[illegible] 16 [illegible] 102 [illegible] 38 [illegible] 65 [illegible]

[illegible] the [illegible] healed, [illegible] insensitive to touch on [illegible] The [illegible] degree of [illegible] the radial nerve [illegible]

[illegible] and Insensitive Posterior Cutaneous

[illegible] the radial nerve was [illegible] posterior cutaneous nerve of [illegible] insensitive strip of skin in the [illegible] skin supplied by the radial nerve [illegible] No attempt was made to secure [illegible] the sensibility following operation on [illegible] as follows —



Key

Skin area	Nerve supply	Nerve	
		divided	sutured
A	Posterior cutaneous nerve of forearm	On 6 2 43 at operation	No
B	Radial	On 11 12.42 by shell fragment	Yes On 6 2.43

FIG 15 (diagrammatic) —Sensory loss in upper limb

[illegible] sensory investigations were not carried out on the area of skin rendered [illegible] by section of the posterior cutaneous nerve of the forearm Some time after [illegible] had made its reappearance in the hand however it was noticed that some degree [illegible] paresthesia Sensibility had returned to the former area In addition it was [illegible] October 27 1943 (3.10) (263) that a blow in the vicinity of the two operation [illegible] painful and produced paresthesia in the area of insensitive skin now [illegible] rather This was attributed to the formation of a neuroma by the proximal [illegible] posterior cutaneous nerve of the forearm However in view of the fact

[illegible] fresh [illegible] nerve [illegible] that in [illegible] fictitious [illegible] possible—possibly [illegible] 8 1943 [illegible] which the [illegible] examination of the skin supplied by the [illegible]

This [illegible] to the centre area [illegible] in contra distinct [illegible]

Compared to the [illegible] all forms of sensation were [illegible] the phenomena [illegible] Peripheral reference [illegible] that the point at which peripheral [illegible] distribution of the posterior [illegible] skin supplied by the radial nerve.

The sensations elicited [illegible] (pin-prick and pin prick [illegible] of skin innervated by the [illegible] being elicited (hypoesthesia).

Further evidence of hyperesthesia [illegible] stimulus. Temperatures [illegible] all appreciated although the [illegible] temperatures of 30 and 40° C. All temperatures [illegible] 10 and 20° C were the most [illegible] peripheral reference and diffuse. [illegible] by these cold stimuli in the area [illegible]

Sensibility of the skin [illegible] definitely present throughout the [illegible] was also to be found.

Degree of Sensory Overlap [illegible]—When sensory investigations [illegible] nerve it was found that the phenomena [illegible] the distal end of the area—often over the [illegible] metacarpo-phalangeal joints of the index [illegible]

Similar investigations in the [illegible] of the forearm also caused peripheral [illegible] towards the distal end of the skin area supplied [illegible] arm, i.e. over the distal third of the [illegible] nerve.

If a sensory stimulus was [illegible] of altered sensibility supplied by the [illegible] the greatest possible distance by [illegible] was experienced and that at which [illegible] the most distal end of that area. On [illegible] situated the distance between such [illegible] which peripheral reference [illegible] stimulus itself applied in the distal [illegible] and local sensation was experienced [illegible] reference. This minimum point of [illegible] fraction further distally [illegible] situated at the distal end of the skin [illegible] phalanx of the thumb and over the [illegible] fingers. This transference of [illegible] supplied by the posterior cutaneous [illegible] by the radial nerve must mark the [illegible] form of sensibility being tested [illegible]

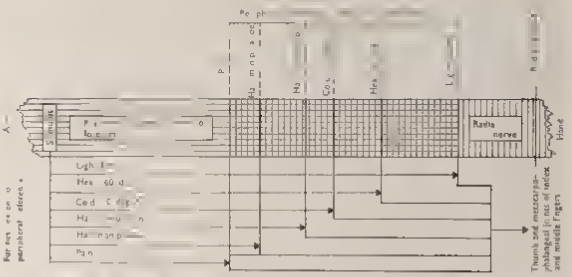


FIG. [illegible] (TRANSFERENCE [illegible]) of peripheral reference as a means of assessing sensory overlap. The distal [illegible] are those which transference [illegible] from each other and from the radial nerve [illegible]

This clinical research was carried out with six different sensory stimuli—pin-prick, hair manipulation, hair stimulation with a camel hair paint-brush, cold (0° C.), heat (60° C.) and light touch (camel hair paint brush and the skin shaved).

It was found that the order in which the stimuli, the level at which "transference of peripheral reference" took place, was different from proximal to distal. The levels of "transference" were as follows: pin-prick, hair manipulation, hair stimulation, cold, heat and light touch.

The level of transference for any particular stimulus must mark the extreme distribution of the corresponding sensory fibres in the radial nerve. Thus, as regards the actual distribution of fibres by the radial nerve, that is, for the different forms of sensibility tested, the order in diminishing extent is as follows: pin-prick (greatest extent), hair manipulation, hair stimulation, cold, heat, (0°) C., light touch (smallest extent).

The area of skin lying between the most proximal and the most distal of these levels of "transference" represents the zone of sensory overlap shared by the posterior cutaneous nerve of the forearm and the radial nerve.

Appendix 3

TISSUE REGENERATION IN ANIMALS AND IN MAN

In this Appendix the discussion is limited to one aspect of returning sensibility after nerve regeneration, which I have described in my paper, namely, so-called "peripheral reference".

All observers are agreed that, in man, as in lower animals, returning sensation, all cutaneous stimuli applied to the area, is referred to the periphery. Head believed that this reference of a sensation to the periphery was an inherent quality of his "protopathic" system. Against this, however, is the fact that in man, in areas of the cutaneous skin, no reference of sensation occurs in the immediate zone, a zone which, according to Head, is subserved by a still functioning protopathic system.

Trotter and Davies (in their paper, [illegible]) believed that the reference of sensations is due to actual stimulation of nerve endings, [illegible]. In support of this they have shown that even a normal nerve trunk when stimulated by pin-prick, the faradic current or cold will refer these sensations to the periphery of the skin-area supplied by the nerve. However, if the actual skin has been cut, the referred sensation will

[illegible] the area of [illegible] distribution [illegible] in the [illegible] trunk [illegible] found that the [illegible] extent [illegible] radial [illegible] the [illegible] of its distal [illegible]

Before [illegible] the [illegible] of reference [illegible] an area [illegible] the first [illegible] of the area [illegible] which the [illegible] distally [illegible] end of the [illegible] local reference [illegible] the later sequ[illegible] automatically linked with the [illegible] in skin showing recovered sensation [illegible]

Since originally writing this [illegible] its sensibility and wish to emphasize [illegible]

(1) On stimulating the middle [illegible] interest occurs Points within the [illegible] yield both *peripheral and proximal* [illegible]

(2) On applying a stimulus [illegible] recovery I find that there is will [illegible] the presence of a local sign

Let us now recapitulate the sequ[illegible] peripheral proximal or both [illegible] associated with local sign [illegible] of skin to which the sensation is [illegible]

The sequence of events as regards [illegible] aspects Let us consider these sep[illegible] period of years peripheral refer[illegible] of the area of skin concerned [illegible] the distal end of the skin area is stimu[illegible] both peripheral and proximal [illegible]

My purpose is now to attempt [illegible]

It is first of all necessary [illegible] that [illegible] generating nerve *do not all* [illegible]

Seddon Medwar and Smith hav[illegible] of the sciatic nerve in which [illegible] in the areas of skin supplied by the twe[illegible] that [illegible] conditions at the suture line wen[illegible] of the main sciatic trunk Hen[illegible] different rates

I have already stated my belief [illegible] Davies that the phenomenon [illegible] lition In order to explain the [illegible] sensation I am at this point forced [illegible] of conjecture The assumption [illegible] experimental proof or otherwise

I am now to assume that *the* [illegible] *distributed to the distal end of the* [illegible] *a proximal distribution*

Let us now consider the state of affairs [illegible]

The first fibres to reach the m[illegible] were distributed to the periphery [illegible] otherwise with the first end organs they [illegible]

[illegible]

[illegible] RADIO [illegible]

CASE REPORT [illegible] LIEUTENANT [illegible] CODDE, R.N.

[illegible] patient R. O. K. [illegible] of a large training [illegible] asking [illegible]

He had served for [illegible] and apparently [illegible] He had [illegible] sent home to undergo [illegible] of general training.

He now stated that he [illegible] that he could do neither arms nor gun drill. He [illegible] till.

This unusual—and at first [illegible] proved soon to be true. On examination a spot [illegible] in the trunk.

Finding Histories.—The patient [illegible] as he could remember. He had [illegible] two [illegible].

He could perform [illegible] assessment [illegible] instance arms drill were [illegible].

The left forearm was [illegible] left hand.

Family History.—The patient's [illegible] only. He has [illegible] the fourth in [illegible] family, who has the same [illegible] forearm only [illegible]. There are three other brothers and two [illegible] this complaint. The affected brother is left handed.

On Examination.—By the [illegible] principal points [illegible] the normal range of movement. By [illegible] in the upper third [illegible] wrist and [illegible] small or absent head of radius and the [illegible] the adjacent part of the head. The right forearm is in full pronation

[illegible]

[illegible] a relatively [illegible] with the humerus [illegible]

[illegible] shows characteristic [illegible]

[illegible] radius and ulna [illegible] are almost always [illegible] there is no [illegible] (in another type of [illegible]) The [illegible] in Hardcastle [illegible]

[illegible] cement [illegible] bone not seen [illegible]

[illegible] the lower end [illegible]

[illegible]

Diagnosis—In some cases the [illegible] hereditary. In this case [illegible] is equally common in both sexes.

Treatment—The [illegible] with the [illegible] Normally the radius and ulna [illegible] humerus [illegible] are cartilaginous [illegible]

In a [illegible] synostosis [illegible] the full process of fusion is never completed, the upper end of the [illegible]

The [illegible] by the position of the [illegible] in which the forearm is [illegible] the trunk.

As [illegible] this [illegible] type of [illegible] is often [illegible]

The [illegible] the humerus at the shoulder [illegible]

The [illegible] special mountings [illegible]

Treatment—The [illegible] of the [illegible] operative treatment.

In view of the excellent [illegible] was not considered.

The [illegible] which [illegible]

[illegible] out that besides the [illegible] circumstance which does [illegible]

[illegible] dinar joints as shown radio [illegible]

[illegible] in illustration of how a physical [illegible] but precludes even minimal efficiency [illegible]

[illegible] S B A Parry of H M S Glendower' for radio- [illegible] H B Martin R N (Retd.) for permission to report this [illegible]

[illegible] BODIES IN THE SHOULDER JOINT

[illegible] MAJOR R J A SHUPTRED R A V R

[illegible] joint receive only passing reference in the current [illegible] They are usually classified as rare and in no [illegible] the knee or elbow joint Henderson (1940) states [illegible] in the shoulder joint They cause irregular [illegible] that the loose bodies encountered in our cases were [illegible] substantiated by Henderson and Jones (1923) [illegible] who had ten loose bodies in the shoulder by [illegible] with multiple loose bodies in the shoulder joint [illegible] loose bodies in the shoulder are few and [illegible]

[illegible] conveniently as follows —

[illegible] of inspissated fibrin and usually associated [illegible]

[illegible] *Osteochondromatosis*) —These may arise in [illegible] be detachments of synovial membrane [illegible] some other cause —possibly neoplastic

[illegible] *Osteochondritis Dissecans* —Often solitary types [illegible] bone which has undergone separation [illegible]

[illegible] These may arise from fragments of cartilage [illegible]

[illegible] *Arthritis or Rheumatoid Arthritis* —Including [illegible] fringes of synovium or bony fragments [illegible]

[illegible] may not be so easy to separate Groups 2, [illegible] bodies classified under Groups 2 and 4 [illegible]

[illegible] recently Three have been collected [illegible] condition is less rare than usually [illegible] features which are discussed [illegible]

[illegible] right shoulder at Rugby in 1937— [illegible] supporting this diagnosis After [illegible] strenuous games until 1944 when in [illegible] Since this second injury his [illegible] dropping and having [illegible] so frequent that he [illegible] diagnosis of recurrent dislocation of [illegible] shoulder however gave a [illegible] be detected clinically The [illegible] all loose bodies in the region [illegible] through the deltopectoral [illegible] No other abnormality was

[illegible]

[illegible]

[illegible] ation was [illegible] the [illegible] upperled [illegible] those [illegible] ically [illegible] ns after opera[illegible]

Radiological diagnosis [illegible] has been drawn to the fact that [illegible] that stereoscopic views did not [illegible] dues

Fig. 4. [illegible]
Right shoulder (ap[illegible]

in the subacromial [illegible] this [illegible] 40) were [illegible] the subacromial [illegible]

Clinically [illegible] but [illegible] and reptilus may be [illegible] the patient described his [illegible] the [illegible] In Case 2 [illegible] present little difficulty in [illegible] a fold or pouch at the [illegible] Rep[illegible] therefore necessary [illegible] doing many apparently [illegible]

The coincid[illegible] than previously [illegible] the sequence of [illegible] formation of [illegible] articular surfaces

The pathology of [illegible] many operative procedures [illegible] Blundell Bankart (1938) [illegible] experience is constructi[illegible] and of the anterior capsule [illegible] the

[illegible] (1942) supported Bankart's findings and [illegible] the tear of the glenoid rim [illegible] to be present These are erosion or [illegible] the glenoid portion of the head of [illegible] in antero posterior projection is [illegible] The defect may range from a mere [illegible] the posterior head These authors [illegible] in 1882 and by Perthes in 1906 [illegible] joint might conceivably give rise to a [illegible] loose bodies occurring in association [illegible] head Bost and Inman in one of [illegible] 1 0 cm × 0 5 cm

[illegible] discussion on operative procedures [illegible] such cases the possibility of loose body [illegible] operations have not the advantage of [illegible] loose bodies If a definite [illegible] the joint might be the operation [illegible] may result in the symptoms [illegible]

[illegible] Cases 2 and 3 and shared [illegible] I must thank Surgeon [illegible]

[illegible] 26 [illegible] C and [illegible] *Brit J of Surgery* [illegible] 1940 **28** [illegible] and Jones *Ann of* [illegible] 1938 **14** [illegible]

A CASE OF FAMILIAL SYRINGOMYELIA PROGRESSIVA OF THE LANGE-LUNDBORG-STAHLI TYPE

[illegible]

[illegible] of unknown [illegible] The initial features of the disappearance [illegible] but limited to the lips Originally [illegible] in otherwise healthy child [illegible] fat which atrophy when fully [illegible] face arms neck and torso down to [illegible] upper half of the body [illegible] the buttocks and legs due to the [illegible] disparity between the [illegible] in contrast to the appearance [illegible] The upper half of the body [illegible] wasted appearance [illegible]

The [illegible] remain unimpaired apart from [illegible]

[illegible]

Two [illegible] syrinx In a private [illegible] to the reported simultaneous [illegible] the diaphragm uninterrupted [illegible] *Med* 1930 **23** 54 Clinical [illegible] *Arch* 1923) When the [illegible] however does not return [illegible] not completely progressive [illegible]

[illegible] in the young [illegible] in time to a [illegible] asks [illegible] This relationship [illegible]

The [illegible] deficiency [illegible] been made. The [illegible] Hirsutism [illegible] normal [illegible]

Lagnel Lavastine [illegible] Paris 1942 25 473) of [illegible] of lipodystrophia progressa [illegible] the upper body fat was [illegible] change was one of increase [illegible] at a meeting of the [illegible] the stress is laid on the [illegible] be seen in Purves Stewart [illegible] Diagnosis in which [illegible]

In the case reported by [illegible] 1907 40 272) the photographs (which [illegible] atrophy with mild increase in the [illegible]

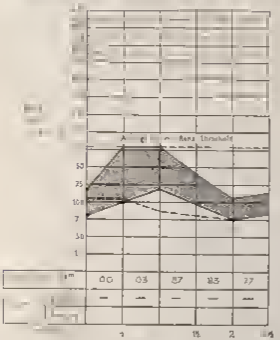
The case of Lagnel [illegible] of this type have been seen by me [illegible] present age 23 whose case [illegible] to photograph the whole body [illegible] my Jewish blood. (It is possible that [illegible]

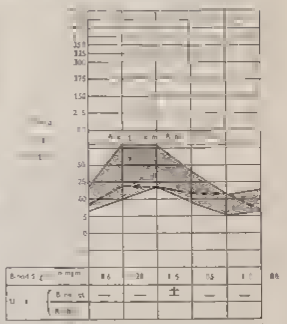
[illegible]

When [illegible]

[illegible] back of [illegible] exercise [illegible]

[illegible]





[illegible] September 1945

[illegible] December 1945 [illegible]

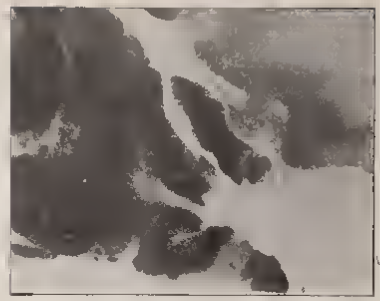
[illegible]

[illegible]

[illegible]

BLOOD SUGAR & POISE AFTER INTROD
[illegible] ON NORMAL DIET

[illegible]



[illegible] lamus

[illegible]

Although [illegible] it is interesting to discuss the [illegible] which are known with a specific tissue limitation [illegible] and an as universalis sclerodema or the [illegible] the retina associated with pseudoxanthoma elasticum [illegible] supposedly neurologically determined [illegible] Closely related to lipodystrophy is the [illegible] limited to the face or to one part of the body [illegible] muscle and bone

In attempting [illegible] pathological or physiological process from [illegible] crumbling black presents itself namely that the [illegible] unknown The general endocrine background is apparently [illegible] rather than a determiner of the local deposition [illegible] which must needs enter into such metabolism [illegible] pericardium mesentery [illegible] certain areas—the [illegible] certain areas appear to be spared [illegible] soles and palms forehead, scalp eyelids and [illegible]

It is theoretically [illegible] depend on humoral control that the [illegible] tissue finds determines the local fat metabolism [illegible] Unfortunately in attempting to explain [illegible] difficulties It would be necessary to postulate [illegible] in anti catalyst using these terms in the [illegible] how the hips

A far more reasonable [illegible] determination is dependent on local neural control [illegible] that the nervous system in some way plays [illegible] regionally or segmentally devised [illegible]

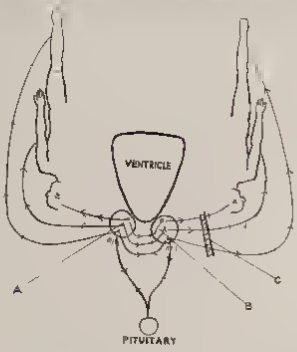
To explain lipodystrophy [illegible] —

(i) The presence of [illegible] metabolic effects may be transmitted

[illegible]

[illegible] with the pituitary

Such an arrangement [illegible] disturbance. For [illegible] disturbance as also in [illegible] hematrophy the [illegible] with the face arm [illegible] accounted for by [illegible]



Physiological fat would depend on the balance of this system. If [illegible] that destruction of these centres leads to fat atrophy, then stimulation [illegible] fat deposition or vice versa. The functioning of such nuclei must be [illegible] alteration in hormone output. Hence the suggested connection with the pituitary.

If such a system be assumed, there is some evidence to suggest that it [illegible] lo atrophy in the hypothalamic area. It is known that the sympathetic [illegible] is represented in the posterior and lateral part of the hypothalamus, whilst the [illegible] appears to be represented in the neighbourhood of the tuber. Lesions of [illegible] obesity with or without genital dystrophy.

Claude Bernard in 1849 produced transitory glycosuria by puncturing the floor of the [illegible] Many subsequent experiments have shown that lesions of the paraventricular nucleus is concerned in the upset of glycogen balance. Lesions of this nucleus have been found in autopsied diabetics, whilst Barnes and Ingram (*American Journal of Path.* [illegible] 1936, 12, 555) have produced permanent hypoglycæmia by experimental lesions in the region of the paraventricular nucleus. (It is to be remembered that transitory glycosuria has been reported in lipodystrophy and that the patient reported in Section [illegible] had an abnormal glycogen balance.)

[illegible] ty [illegible] ns [illegible] ssiva [illegible]

[illegible] pan [illegible] ed in [illegible] possible [illegible]

[illegible] Whether in [illegible] nucleus it would [illegible] this condition bear [illegible]

This [illegible] an infection (e.g. [illegible]). Potentially it might [illegible] childhood might [illegible] private nuclei [illegible]

[illegible] ional that two [illegible] however [illegible] by Lagrand Lavastine and [illegible] on the beach when attention [illegible] ings of young women, dism[illegible] lack of proportion of the [illegible] al activities are com[illegible] this fat distribution [illegible] disturbance in the [illegible]

[illegible] collected material [illegible] further references [illegible] mission to include [illegible]

[illegible]

[illegible] Dismit in [illegible] ofm [illegible]

[illegible]

(1) [illegible] all [illegible]

(2) [illegible]

(3) [illegible]

(4) [illegible] ll vs

The [illegible] must be complete operativ[illegible] ch of their time

[1] A paper [illegible] the Royal Society of Medicine [illegible]

[illegible] fully prepared [illegible] with a minimum of delay. [illegible] facilities as [illegible] necessary must be always available [illegible] within the limited supply. This provides the first point of contact [illegible] Army which [illegible] authorities [illegible] take place and [illegible] concentrate the supplies [illegible]

[illegible] has first to be carried out [illegible] the [illegible] of the [illegible] of the [illegible] and [illegible] of the [illegible]

[illegible] is [illegible] to compare [illegible] resuscitation [illegible] but the early results [illegible] shock [illegible]

As a result [illegible] has mainly [illegible] hospitals and hospital ships where [illegible] hours after wounding [illegible] of eight to twenty hours after wounding [illegible] opportunity to observe the [illegible] phases of shock has not always occurred.

The clinical problem has [illegible] by several factors. The high incidence of burns in many actions has [illegible] heavy demands on plasma or serum. Medical officers must be very wary lest they [illegible] with blast injuries to the lungs, which are to be anticipated in bomb shelters [illegible] asphyxia occurring in the confined and crowded spaces of a ship. In the present [illegible] carbon monoxide poisoning may occur and an additional [illegible] transfusion.

Furthermore the [illegible] performing venepuncture or venesection in a vibrating ship [illegible] with the turmoil of damage repair or possibly of a running action. [illegible] specially if the operator has not had recent practice. The possibility [illegible] arterial puncture has been suggested for such an occasion. We have no practical experience [illegible] apart from possible risks [illegible] upon such a procedure in unskilled hands [illegible] would prove impractical.

The emergencies at sea will fall into three main categories. The first when the casualties are so numerous that the prior [illegible] first aid and dressing of wounds together will more than tax the full [illegible] (H.M.S. "Illustrious," heavily bombed off Malta). The second when [illegible] and first aid—such as immobilization of fractures and securing adequate hemostasis—[illegible] most severely wounded may be attempted. Lastly with the [illegible] only two or three casualties possibly due to isolated accidents or bomb splinters, it should be practicable to exhibit the full care and attention which adequate resuscitation demands.

Blood and Blood Substitutes

(1) *Serum and Plasma.*—For use in ships [illegible] particularly [illegible] plasma or serum. These blood substitutes [illegible] do not require careful refrigeration and are apparently [illegible] vibration. They [illegible] therapeutic effect in the treatment of burn shock, but the mental treatment of the patient should [illegible] and the incidence of adverse reactions is low. Whether human serum can be safely used after preservation for three years—how long this period of safety extends beyond the third year we do not know—but it may well be considered. The [illegible] serum and bottles of *saline* for their [illegible] when this is necessary. A great disadvantage of serum [illegible] present [illegible] world.

(2) *Blood.*—The clinical indications for this [illegible] under the following circumstances: First after [illegible] administered and recovery has not occurred [illegible] apparently resuscitated patient who is again [illegible] treatment [illegible] for some cases and [illegible] for others in sudden [illegible]

[illegible] except [illegible] ships [illegible] discontinued. The [illegible] blood from [illegible] when the [illegible] of excessive [illegible] blood [illegible].

[illegible]

[illegible]

[illegible] and [illegible] samples.

[illegible]

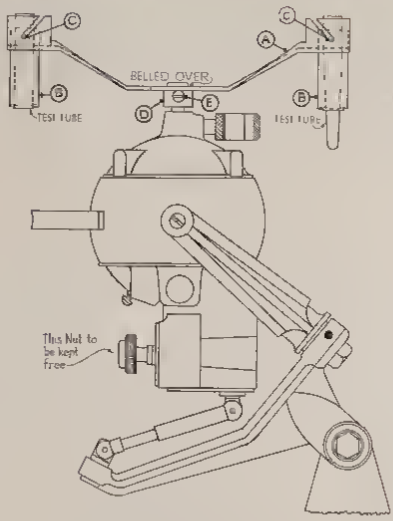
[illegible]

[illegible]

[illegible]

EXAMPLE I

NIRTHLEY [illegible] FOR USE WITH [illegible] FAN MOTOR



CLINICAL EXPERIENCES

As Brigadier Whitby has already stressed in many quarters transfusion facilities are so excellent that there is a tendency for people to lose their sense of proportion with regard to the indications for transfusion. This has been evident even to the extent of persons failing to immobilize compound fractures adequately or to secure adequate hæmostasis.

He also stressed the fact that to carry out resuscitation of large numbers of casualties it is essential to have expert teams allocated for this purpose.

After the raid on Dieppe on the morning of August 19, 1942, owing to a dislocation of arrangements elsewhere 261 casualties were admitted to a Naval Hospital which had been warned to expect a maximum of 50 between 10.30 p.m. on the 19th and 7.30 a.m. on the 20th.

EXAMPLE I

FOLLOWING THE RAID ON DIEPPE—1942

261 Casualties admitted to a Naval Hospital arriving within 36 hours after wounding.

19 had died in transit or at about the time of admission.

169 in all [illegible] cases [illegible] serious casualties [illegible] later

Very few [illegible] blood given [illegible]

Only 4 cases [illegible]

The majority had [illegible] during the first [illegible] early morning or in the afternoon [illegible] perhaps 19 patients were dead [illegible] they arrived at the hospital 169 [illegible] and 30 of these remained in the dangerous and serious [illegible] many dead were never brought [illegible] the hospital Ten days after the [illegible] 169 serious casualties had died

Organization for blood transfusion [illegible] anticipate such overwhelming numbers Only 16 bottles of blood were used in the [illegible] the casualties were admitted and 4 of these were given to one of the subsequently fatal cases Of the 4 fatal cases 3 almost certainly sustained mortal fatal wounds and in [illegible] doubtful if immediate transfusion could have saved the fourth

EXAMPLES

FATAL CASES WHO DIED IN HOSPITAL AFTER DIEPPE AND BEFORE—28 8 42

Case 1 Lacerated extensive [illegible] of shoulder and neck lacerated wound left hypochondrium [illegible] Not transfused Died 0820 hours 28 8 42

Case 2 Lacerated wound right [illegible] left thigh and infected laceration of rectum [illegible] blood [illegible] wounds explored and packed Collapsed [illegible] hours after [illegible] given 1 500 c.c of blood and 500 c.c of plasma [illegible] but collapsed and died 4 hours later

Case 3 [illegible] of left [illegible] fractures left femur left elbow and left temple Operation 18 [illegible] after injury Died soon afterwards Not transfused

Case 4 [illegible] of right [illegible] and [illegible] right leg and thigh and thoracic wound of liver Condition [illegible] Died ten hours after admission Not transfused

It thus appears that with an extensive group of severe casualties admitted ten to twenty hours after wounding the lack of elaborate transfusion arrangements did not greatly affect the immediate mortality There can be little doubt that some of the 19 dead succumbed to oligaemic shock prior to admission to hospital and this stresses again the need for transfusion at the earliest possible moment in the treatment of severe cases of this type if transfusion is to save life

Incidentally there were 14 severe chest wounds 6 of whom had a haemothorax None of them died whilst under observation and none were extensively transfused during the acute phases.

On the night of June 18 1943 an incident occurred which demonstrated the results of early transfusion of casualties A German plane dropped a bomb on one of H M Training Establishments

EXAMPLE 5

FOLLOWING THE BOMBING OF ONE OF H.M. TRAINING ESTABLISHMENTS—18 6 43

34 men were killed outright at 0040 hours

19 casualties admitted to hospital 8 miles away within 2-4 hours wounding

The majority were dangerously injured 4 were in a desperate state but resuscitated sufficiently well to be operated upon 2 died in O T one 10 hours later and one 4 days later of uraemia

34 men were killed outright and 19 desperately wounded casualties were admitted to hospital 8 miles away within two to four hours of injury There were ample supplies of blood 3 transfusion teams available and the resuscitation organization worked excellently 4 of these casualties were desperately ill with multiple and large lacerated wounds and compound fractures and probably fell into that group of cases which failed to survive the return journey from Dieppe

EXAMPLE 7

FATAL CASES WHO DIED IN HOSPITAL [illegible]
HAD TRANSIN[illegible] ESTABLISHMENTS WAS [illegible]

[illegible] left thigh Resuscitated well [illegible] miles of [illegible] with blood [illegible] breathing [illegible] a half [illegible] 90 mm Hg [illegible]
[illegible] Impure [illegible] both lungs
[illegible] fracture of thigh and buttock and small [illegible] excellently [illegible] Transfusion [illegible] Dyspnoea and [illegible]
[illegible]
[illegible] Stool resected on [illegible] well Shock [illegible] infusion [illegible] RBC 3 8 million [illegible]
[illegible]

[illegible] right [illegible] right [illegible] [illegible] pour [illegible]

They [illegible] [illegible] [illegible] [illegible] [illegible] 2 [illegible] bottles of blood Blood pressure [illegible] improved and [illegible] improved and their general [illegible] appeared [illegible] They [illegible] upon and [illegible] that was not to secure [illegible] the lungs stasis and to immobilize fractures in the shortest possible time

Amputation of thigh was necessary in 8 cases All 4 patients died

One suddenly collapsed on the operation table and coughed up blood stained froth At post-mortem he was found to have residual basal injuries of both lungs but it is doubtful if he would even have reached the operating theatre had he not been transfused first

The second died just after his operation was completed and at post mortem he was found to have an extensive infusion of the upper lobe of one lung, and collapse of the basal part of that lung the injury was caused by a small piece of shrapnel with a very small wound of entry and the severity of the condition had been detected prior to operation It is essential that this patient should be operated upon early as he also bled from an extensive lacerated wound of the thigh and bullock as soon as resuscitation began to take effect and his blood pressure rose It was not practical to stop this bleeding by first aid measures

The third patient was resuscitated extremely well it was able to stand the resection of 18 inches of gut for multiple gunshot wound of the mid shine and he also had extensive compound fractures of the right tibia and right femur and of the left tibia He collapsed ten hours after operation and at post mortem the lungs showed basal pulmonary oedema but no blast injuries In retrospect I think he should have been further transfused after operation and with blood but this had been withheld on account of a red cell count of 4 000 000 and a haemoglobin percentage of 78 per cent two hours before he died and slow saline transfusion was initiated instead

The fourth patient resuscitated well well to the operating theatre four hours after wounding having had 3 bottles of blood The major wounds were a comminuted compound fracture of the upper third of the right femur with a very extensive lacerated wound of the buttock and a compound fracture of the right tibia It was essential to carry out a hind quarter amputation following which the patient collapsed on three occasions from blood loss into the dressings from an extensive oozing wound On each of these occasions he responded admirably to the transfusion of one to three bottles of blood it appeared that he might survive but subsequently he failed to pass urine his blood urea was 240 mgm per cent thirty-six hours after wounding and he died of uraemia two days later A post mortem was refused by his relatives and the cause of death was thought to be between blockage of the renal tubules by crystals of sulphathiazole used as a prophylactic against gas gangrene or possibly by myohaemoglobin

The possibility of incompatible transfusion was carefully considered and my sincere fear and thought to be the least likely of the three possibilities. The other casualties all recovered.

As Brigadier Webb has pointed out, early surgery—as soon as the patient appears to be fit to stand it—is essential for cases with extensive muscle damage, but it should be minimal surgery, for the patients will not stand more, and they will nearly always require continued resuscitation afterwards. It is most important, if at all practical, that the surgeon who treats the case should see him on admission and not for the first time after two or three hours of resuscitation, by which time the clinical improvement is frequently so dramatic that he, the surgeon, may not fully realize how slender is the thread on which the patient's life hangs and may feel tempted to carry out more extensive operative procedures than are absolutely essential. The presence of an injury to the chest wall or the possibility of damage to the lungs should cause one to proceed very carefully in the transfusion of a case, although this may occasionally have to be attempted in the concomitant presence of other extensive and shocking wounds elsewhere.

The use of whole blood freshly drawn if possible was primarily indicated for the treatment in hospital of the desperately wounded men referred to in the two incidents described above.

Burns

The high incidence of burn casualties calls for large supplies of plasma or serum. After an explosion in one of H.M. ships recently, 4 patients with burns of only moderate severity who were treated with sulphadiazine cream and were not tanned required 4ft bottles of dried serum between them in the first forty eight hours, in order to prevent haemoconcentration becoming excessive. As the plasma was administered, so it seemed to pour from the burnt areas into the dressings. The eventual cosmetic results were good.

Before and during the evacuation of Crete, 634 burn casualties were admitted to the 64th General Hospital, Alexandria, between May 5 and June 1, 1941. The majority of these burns had been treated with Tannafax or a similar product in the ships. Thirteen had died by June 6, and many others were seriously ill. Until supplies of unfiltered plasma became available towards the end of May, and 6 patients with rising haemoconcentration were infused twenty four to thirty six hours after they were burnt. Two of them, with gross haemoconcentration, died. The improvement in the other cases was remarkable. Incidentally the use of unfiltered plasma for these cases was unattended by any undesirable manifestation of toxicity.

Clegg and Wolfe (1942) have described how they treated 16 of the more desperately burnt cases in the Hospital Ship "Maine," which was lying in the harbour at this time; their cases were all severe. 7 died, and plasma was considered to be the great factor in saving the majority of the survivors.

Protein fluids are essential for these cases, and it is likely that if the standard method of treatment is to change from the principle of applying a coagulating application to extensive burnt surfaces to that of using non occlusive creams, the demand for such fluids may well outstrip the sources of supply at times.

The great value of fresh blood was observed in the treatment of the sometimes surprisingly severe anæmia which may occur seven to ten days after burning.

Summary

(1) Reconstituted plasma or serum is the protein fluid of choice for resuscitation in ships.

(2) If blood is strongly indicated it should be freshly drawn from reliable donors.

(3) Ready availability of transfusion facilities must not be allowed to dazzle clinicians and prevent their carrying out the essential first aid which should always precede the tackling of transfusion problems.

(4) Transfusion at the earliest possible time after wounding is essential if wounded are to survive severe oligæmic shock. A large miscellaneous group of severely wounded cases were received within ten hours after wounding; the immediate mortality was not greatly affected by the lack of elaborate transfusion arrangements.

(5) Serum transfusion of burns will often achieve admirable therapeutic results even if initiated, by force of circumstances after a delay of twenty four to thirty six hours after wounding.

[illegible] surgeon [illegible] see the case prior to [illegible] for the [illegible] always essential but should be [illegible] continued after [illegible]

(7) Great care should be taken in transfusion of cases with injury to the chest wall

(8) If tanning of burns should be replaced by the use of non-coagulant [illegible] the demand for serum or plasma will be greatly increased

REFERENCE

Clegg, H. W. and Wolfe, R. R. *Lancet* 1942 I 191

INSULIN THERAPY IN ACNE VULGARIS IN TROPICS

By Surgeon Lieutenant-Commander S. A. Stewart, R.A.N.R.

In 1938 while treating cases of schizophrenia with insulin it was noticed that [illegible] extensive acne vulgaris in a young woman under treatment completely disappeared. At that time little thought was given to this phenomenon but it was recalled later when acne vulgaris became a serious problem on leave service with the Navy. Acne vulgaris in the [illegible] male is a very real problem to naval medical officers especially in tropical [illegible] Manson Bahr's remarks on the subject. All Service medical officers will agree that acne vulgaris tends to be aggravated in the tropics. While it is admitted that the sweat [illegible] living factor in the crisis and this complaint is the seborrhoeic skin in the tropics the [illegible] elemental assistance is of serious importance than in temperate climates. From the [illegible] point of view it is the infective element in this disease that matters. The predisposing cause of the seborrhoeic skin is an endocrine upset as is evidenced by the apparent [illegible] of the complaint in adolescence. It is not considered that the use of insulin in the treatment of acne vulgaris has any action on the other endocrine glands and it is not intended that acne vulgaris will be actually cured by its use. It has long been the practice to place [illegible] patients on a low carbohydrate diet. The rationale of this treatment appears to be [illegible] the secondarily infecting organisms (usually *Staphylococcus albus*) and the [illegible] which attack the abnormal sebaceous glands both in quiescence and [illegible] and thrive best when the blood sugar is high.

In 1940 it was decided while serving in the Red Sea Patrol to employ [illegible] seven cases of acne vulgaris by the injection of insulin in doses of [illegible] who had done a tour of duty without benefit. Successive from [illegible] in the 19 [illegible] hypodermically at 8 a.m. and 4 p.m. daily. Within four weeks of [illegible] all signs of inflammatory reaction had disappeared and no further [illegible] appeared during the next four months when the period of observation ceased. The disease reappeared [illegible] and was finally discharged to hospital.

No further use was made of insulin until September 1942 when [illegible] patients in the tropics. On this occasion it was [illegible] establishment of the tropics. The effect of treatment was [illegible] Within three weeks the [illegible] had disappeared and with [illegible] the patients were [illegible] Many of the [illegible] were dealt with by regular [illegible] with spirit [illegible] application of 2 per cent salicylic acid and sulphur ointment. All the [illegible] were [illegible] discharged within twenty-eight days. Only one [illegible] observed subsequently and he was [illegible] with a recurrence. The complaint was [illegible] when a remission was again sought with success.

In 1943 a further two cases were treated [illegible] these only two showed any appreciable response within three weeks [illegible] which did not respond were all [illegible] with marked [illegible] formation and were of need to be treated [illegible] with X-ray therapy. [illegible]

which did not [illegible] completely quiescent from the inflammatory view point but the sebaceous glands [illegible] abnormal with much comedo formation

In 1944 and 1945 a further fourteen cases have been treated with insulin Once again the [illegible] in the tropics at sea No local treatment was given during insulin therapy in [illegible] exceptional drainage of pus from some lesions which did not point satisfactorily In all but two cases improvement was rapid and in one case fourteen days treatment [illegible] subsidence of the acute inflammatory lesions The remaining cases were [illegible] with much scarring and many cysts Treatment was continued [illegible] with only slight if any improvement

In all cases local treatment was instituted at the cessation of insulin therapy to promote [illegible] the [illegible] sebaceous glands All have done well since and after [illegible] only in one had a further exacerbation This was subjected to a [illegible] and induction of a remission within three weeks

A [illegible] of the ratings in this series off duty at all and although a few instances [illegible] these were uncommon and easily combated with [illegible] All cases treated were advised to take a low carbohydrate diet to [illegible] the small doses of insulin used

[illegible] namely 10 units twice daily was purely empirical and no blood [illegible] It was imperative for obvious reasons that these men should [illegible] insulin in hospital as sudden happens to Service personnel with minor [illegible] dermatological cases) It was found that the dosage of insulin used [illegible] of 0600 and 1600 did not greatly interfere with Service working hours and [illegible] hours were saved to the Service In addition it is probable that invaliding [illegible] number of cases While it is not claimed that insulin therapy was the sole [illegible] the treatment of these cases it is notorious amongst medical officers in [illegible] acne vulgaris cases in the bank of their existence and no local treatment [illegible] good The seconded remission is very valuable in the Services and if local [illegible] it is unlikely that severe recurrence will occur The use of insulin [illegible] treatment of acne vulgaris has in the limited experience of the writer [illegible] any method of treatment known to him Out of thirty three [illegible] remission was obtained in twenty five improvement in four cases [illegible] the remaining four [illegible] Talk in percentages in so small a series [illegible] is limited by the number of cases available for study

Conclusions

[illegible] which causes much inability in the Services is exacerbated in tropics [illegible] most forms of treatment

[illegible] between 1940 and 1945 thirty three cases have been treated with 10 units of insulin twice daily for periods ranging from three to six weeks and complete remission has been secured in twenty four of these

(2) Recurrences are likely to occur and few of these cases have been observed for more than six months However when recurrence was observed after an initially good response it was [illegible] secured with a second course of insulin

(4) It is stressed that this is a very small series of cases from which no conclusions can be drawn as to the percentage of cases likely to respond

5 Insulin therapy by no means replaces local treatment but is an adjuvant to the latter It tends to shorten the remission of the infective phase In some cases the lesions of [illegible] insulin dissolve as if by magic

REFERENCE

1 Manson Bahr Philip Tropical Diseases Cassell & Co p 7

RACIAL AND GEOGRAPHICAL VARIATIONS IN THE FREQUENCIES OF THE BLOOD GROUPS[1]

By Surgeon Commander [illegible] R.N.V.R.

In 1900 Landsteiner discovered that the [illegible] human beings could agglutinate the red cells of certain others. By 1902 the [illegible] blood groups which we now call O, A, B and AB had been discovered. It was [illegible] 1909 however that a paper was published demonstrating, for the first time, the relative proportions of the four groups. This very fine contribution was made by [illegible] and H. Hirschfeld. They determined the blood groups in samples of from 500 to 1,000 each, drawn from some dozen of the very varied races composing the Allied Army in Macedonia. The differences were striking and clearly foreshadowed the distributions that we know to-day. Since that time knowledge has accumulated very rapidly. Observations have been made all over the world and even before the last war it could be said that more was known about racial variations in the distribution of the human blood groups than was known about the distribution of any other genes whatsoever, whether plant or animal. A review published by Boyd in 1939, which includes some maps that I am going to show you, also includes a table summarizing the various investigations published up to that time; this table extends to no less than eighty pages. During the last war, of course, there has been the opportunity of grouping blood donors on a vast scale and so filling in a great amount of further detail.

Another development since 1919 has been the discovery of new blood groups. The A, B, O groups have been split up into subgroups. The M.N groups have been discovered, also the somewhat difficult P group. Above all, there was the discovery in 1940 by Landsteiner and Wiener of the Rh blood groups, which all these past decades have been of such great importance in research and in transfusion and permeates practically all the world. All these blood groups show racial and geographical variations in their distribution. But the field is so vast that I am only going to deal with a part of it. I propose therefore to-day in the first part of this paper to deal with the classical four groups and then to say something about Rh.

It may be useful to consider some of the reasons which make the classical A, B, O blood groups the most valuable anthropological index that we possess. In the first place, the group to which a person belongs is determined solely by heredity. Environmental influences, whether operating before or after birth, have no effect whatever. This is not true to such a measure as cranial index, for example. The ratio of breadth to length of the head is a measure much used in anthropology. Head shape is altered, it may be considerably, affected by non genetic influences. I remember seeing a pair of identically identical twins, pupils of Professor Bruce Perry; these two boys had very similar cranial capacity, but in spite of an identical hereditary constitution one had a relatively long, narrow head, the other a relatively short broad one.

In the second place the inheritance of the blood groups is very simple, unlike stature, head form or colour, which are complex genetically. In the third place, the blood groups do not have any selective or adaptive value, at all, can have only a very small one. In spite of many studies no one has yet been able to show conclusively that it is of any advantage to belong to one group rather than another. This is very different from skin colour, for example. Hildane (1940) has suggested that pigmentation is so strongly adaptive that the present European gradient has been developed in post pluvial times, and however useful it may be in tracing the racial movements of say the last 2,000 years, unlike the blood groups it can throw little light on matters more remote, origins.

For which of the four blood groups a human being belongs depends upon which pair of hereditary factors or genes he has received from his parents, one from each. If one of these genes is an A gene his red cells will contain antigen A and he will be agglutinated by the antibody present in the serum of those individuals not possessing A. Similarly if he receives a B gene his red cells will contain antigen B. Should he than receive both A and B, one from each parent, he will develop both antigens and so belong to group AB. If he receives neither A nor B, that is if he receives two O genes, he will belong to group O—he will be universal donor.

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[1] A lecture delivered to the Clement Scott Royal Naval Auxiliary Hospital, Barrow, Gurney, in February 21st 1946.

Genes	Cells Main Reagent	Serum Other Reagent	Result
Gene O	—	Anti A, Anti B	O
Gene A and Gene O	A	Anti B	A
Gene B and Gene O	B	Anti A	B
Genes A and B	A and B	—	AB

We can specify a population by showing the percentage of people belonging to each group. For example the population of the six south western counties [illegible] gives the following frequencies —

	Per cent
O	44.4
A	44.0
B	9.4
AB	3.2

[illegible] in Europe and in other countries was gene frequencies [illegible] gene and not group frequencies [illegible] Many people belonging to group A [illegible] O gene [illegible] A [illegible] by the group B. Group AB people [illegible] A [illegible] Thus [illegible] into gene frequencies for the six counties [illegible] common [illegible] as follows

	Per cent
O	68.7
A	27.4
B	3.9

[illegible]

	Per cent			
	O	A	B	AB
[illegible]	44	44	9	3
[illegible]	47	41	11	[illegible]
[illegible]	5	5	1	0
[illegible]	3	25	51	11
[illegible]	41	41		
[illegible]	5	5	—	—
[illegible]	55	15	—	—

[illegible]

	Per cent			
Blood Group	O	A	AB	B
[illegible]	44	44	3	9
[illegible]	44	41	11	25
[illegible]	41	41	5	5
[illegible]	3	25	51	11
[illegible]	55	15	9	5

[illegible] Africa [illegible] Asia [illegible] Mongolia with a secondary high [illegible] in Central Asia. It has to be concluded in the opinion of the authorities that [illegible] in Asia [illegible] secondary some in Africa and that the B found in the rest of [illegible] outward spread. Haldane (1949) has calculated that the [illegible] mutation in the 20,000 years or [illegible] possibly a rate of mutation much higher than any [illegible] known at present. It should be mentioned however that a few small centres of

Map 1

Diagrammatic representation of frequency of blood group gene B (B). Continents drawn through points supposed to be at equal genetic frequency

W. C. Boyd

high B have been reported in South America. There may exist therefore small [illegible] pockets of high B due, no doubt, to [illegible] immigration.[1]

I will give just one example quoted from Haldane's paper to show how the distribution of B can throw light on anthropological problems. As is well known, the characteristically long-headed peoples of Northern Europe are separated from the dark, long-headed peoples of the Mediterranean by the round-headed Alpines. Race theorists have invoked the hypothesis of immigration into Central Europe from the East. Blood group frequencies have not negatived this hypothesis. Austria is serologically speaking no more eastern than Berlin, and the very round-headed people of the Lombardy Plain are actually as western as the most western of all the Scandinavians.

Blood group system A is more complicated in its distribution. It is universal, though differing widely in its place to place, as shown in Map 2.

It must be concluded, one supposes, that man has always possessed A, which he shares today with the chimpanzee. How could the wide variations seen to-day have become established? In palæolithic times man was probably a rare animal, like the gorilla is now. A was more or less isolated in tribes of few hundreds. Individuals altogether would represent the population of an area like the British Isles. The incidental association of the gene with [illegible] would have had peculiarities. Together with the chances of mutation would ensure that in a population numbering O and A some of these small tribes would be high in O, others high in A. This is just what should happen in North American Indians. Some tribes have very little A, others have it in fairly large and extremely high in A. Rapid expansion in numbers would perpetuate these peculiarities, which, distributed in large populations which would also be affected sub[illegible] by immigration and intermarriage.

Wartime blood transfusion schemes have led to the registration in these islands of very [illegible] numbers of donors, and it can now be seen that for all Britain and Ireland are notably [illegible] in the relative proportions of A. By contrast, Fisher shows little difference from place to place. The gene frequency here is about 6 per cent, corresponding to a frequency of group I of 8 or 9.

Here are some figures which illustrate the great variation in the frequency of A found in the British Isles:

	Percentage of O	Percentage of A
Southern England	45	43
Northern England	48	40
Scotland	52	34
Ireland	55	30

Northern England is more or less intermediate. Actually it will probably be found that the most definite line of division is that of the Tweed and Clyde. As far as there is a line of division between Northern and Southern England, it appears to run through Yorkshire, corresponding perhaps to that strategic division so important in the military history of Britain, the line of the River Warle. It is a striking fact that Scotland and Ireland have the lowest frequency of A in Europe. The figures are similar to those of Iceland.

There is a strange feature about these figures, as Fisher and Taylor (1940) have pointed out. Historical records show that Iceland was largely colonized by Scandinavians, and that Scandinavian influences were also strong in Scotland. Yet the Scandinavians of to-day have the highest frequency of group A in Europe, about 50 per cent, while Scotland and Ireland have, with Iceland, the lowest. The most probable explanation is that modern Scandinavians are very different from the Scandinavians of Viking times, who have been largely replaced by waves of immigration from Northern Europe.

What about Wales? Do the Welsh resemble the Scots and Irish as regards blood groups? I was fortunate in obtaining some records of donors from the three north Welsh

[1] A review of examination of natives of Tierra del Fuego (Lipschutz, A. *et al.*, *Nature*, 157, 896, 1946) does not confirm the earlier findings. There is no B amongst them that cannot be explained by crossing.

[illegible] variations in frequency of blood group gene p (A). Contour lines drawn through points surveyed. Its [illegible] equal gene frequencies.

[illegible] Dougl[illegible] and Thelsh[illegible] (Roberts 1942) Here the [illegible]

		Percentages O	A
W[illegible]	1139 [illegible]	51	36
N[illegible]	1118 [illegible]	45	43
Total		48	40

[illegible] that the [illegible] are a whole they are almost identical with those of North [illegible] England. [illegible] Welsh [illegible] are however largely [illegible] in this [illegible] recently [illegible] suburb and dormitory of [illegible] they [illegible] Welsh. A separation of donors according to their family names [illegible] making a separation of moderate though adequate [illegible] (see [illegible] strikes). Donors with Welsh surnames are as low in [illegible] as those of the south [illegible] names are as high as the southern English.

[illegible] Blood Transfusion Service control at Bristol accumulated a very large [illegible] in the south-western counties of England and Brigadier [illegible] Whitby [illegible] allowed me to analyse this material. The total consist (this [illegible] 1941) was 140 000. The percentage of A is closely similar to that found by [illegible] (1941) for the more easterly parts of Southern England. There is [illegible] north.

[illegible] family name technique which yielded such a striking result in the case of [illegible] in conjunction with their names. As a quick and simple way of [illegible] Highland Scottish and Irish names we can select those beginning [illegible] Mac and O. Here are the results —

MAC S 823 Donors O 179 Donors

	Frequencies per cent. Group O	Group A
Mac	51 2	37 2
[illegible]	52 5	36 3
All W[illegible] Country	44 8	44 0

[illegible] is significant in the case of the Mac's and is also significant in the [illegible] and the [illegible] surnames and blood group frequencies. I then proceeded with [illegible] the Mac's and O's amongst names with Welsh surnames in the Bo[illegible] and [illegible] was surprised to find no difference between them and the [illegible] figures.

	Frequencies per cent. Group O	Group A
[illegible]	41 1	44 0
[illegible]	44 4	44 1

Now the [illegible] Welsh surnames in the [illegible] is most indicated from South Wales both be[illegible] South Wales is so much greater than that of North Wales. [illegible] Welsh surnames differ from the southern English? [illegible] from the north Welsh? [illegible] with Welsh names belong to families [illegible] has been diluted by successive [illegible] in the south Wales case, which may be accepted as a conclusive [illegible] the immigration [illegible].

[illegible] Welsh [illegible] the Welsh names into three [illegible] the Welsh [illegible] commoner in the north, the [illegible] commoner in the south and those [illegible] equal frequency. It was found that donors with names more [illegible] significant at the [illegible] A. I have my large counts from South Wales [illegible] Welsh names [illegible] Professor R. A. Fisher —

	Percentages O	A
[illegible]	48	43
[illegible]	45	40

You will [illegible] from those for Southern England generally. Pending further information [illegible] seems likely that while the north Welsh are [illegible] as regards

[illegible] the Hunts and the Irish, the south W[illegible] Table [illegible] English.

[illegible] that. This result surprised me, but [illegible] influences are known to have alle[illegible] them must always have been [illegible] Sa[illegible] cannot be common in Wales a good deal farther [illegible] England — [illegible] first. It is indeed found as appears highly [illegible] South Welsh [illegible] the surnames Welsh names are little if at all lower in [illegible] than in [illegible] that the peoples of North and South Wales who [illegible] the same [illegible] sixteenth century were even at that time very different [illegible].

What about Cornwall? Here are the figures:

	[illegible]	[illegible]
Cornwall (c. 876 donors)	43	44
Remainder of West Country	44	43
Cornish [illegible] (644 donors)	44	41

As you see, there is practically no difference. So this is [illegible] Nor are donors with characteristically Cornish surnames [illegible] Again, then, the population of Cornwall of to-day is similar [illegible] as are the south Welsh while the surnames the Irish [illegible] Welsh [illegible] other in sharing the lowest incidence of Hunt group A [illegible].

Now a word about Rh. The Rh blood group [illegible] Wiener in 1940 and during the short period that I [illegible] knowledge has been stagnant in its rapidity. Only the [illegible] of Science can keep up with it. To-day we know [illegible] to the brilliant synthesis of R. A. Fisher (Ann. 1944) that the Rh [illegible] red cells are a complex of six individual antigens (with [illegible] information which must be very incomplete) the theoretical possibility [illegible]. The Rh blood groups differ completely from the A B O blood groups [illegible] antibodies never occur naturally in the serum of any human [illegible] the cells remain as it were potentialities only and as one of five [illegible]. Further, if the Rh antigens injected during a Rh+ve transfusion into the [illegible] that antigen may stimulate the production of the corresponding antibody [illegible] from the foetus inherited from the father may pass into the [illegible] lacks it the corresponding antibody may be formed. This [illegible] can pass back into the foetal circulation producing erythroblastosis [illegible] jaundice of the newborn.

In spite of the complexity of the Rh story and of its genetics [illegible] of the antigens is far more important than the others because it [illegible] the great majority of catastrophes. In the newest and simplest terminology [illegible] D. The presence or absence of D earns spunds nearly enough to the Rh p[illegible] Rh [illegible] categories of the original simple story.

Eighty-five per cent. of our population possess D. 15 per cent. fail [illegible] Rh negative. 10 per cent. of babies are Rh positive having inherited D from their father [illegible] their mothers lack it. The reaction does not take place every time—in fact [illegible] occur in the first born children. The mother has to be sensitized first. It is [illegible] out, however, that some of the most cases of erythroblastosis can occur [illegible] mothers have had a single transfusion of Rh positive blood. Perhaps the [illegible] the child happens once in twenty times and of those in which mother and [illegible] incompatible. That is the incidence. Erythroblastosis in our population is about one in 200 births if we allow for probable unsuspected instances.

Now here we have something totally different from the A B O blood [illegible] which was was mentioned at the beginning of this paper, must be almost [illegible]. In a population like ours it is taking the long evolutionary view [illegible] to be Rh negative. Rh negative genes are being blotted out with great swiftness. Similarly it has been shown by Haldane (1949) that if there were no population in which almost people were Rh negative evolution would work the other way and rapidly blot out the Rh positive genes. In other words there is a strong tendency for a population to become either all

[illegible] all Rh negative [illegible] ing, on which [illegible] Our [illegible] tion must be in a highly unstable condition. If [illegible] about [illegible] ity the small semi [illegible] tribes mentioned in [illegible] A B O would [illegible] been Rh positive but some by chance may have [illegible] It may [illegible] present day population of Europe and so of North A[illegible] ived by the [illegible] in fairly recent times or the descendants [illegible] It is puzzling [illegible] that predominantly Rh negative race [illegible] found. Yet [illegible] the uniformly Rh negative Welsh and Welsh [illegible] nts responsible for the [illegible] should have become so [illegible] mystery at present.

Certain Asiatic Indian Tribes, Australian aborigines, [illegible] Indonesians, Chinese and Japanese have been found to be almost homogeneously Rh. They nearly all possess Rh and is [illegible] marked all Rh positive. Negroes in North America are much lower in Rh negatives than the white populations of Europe and North [illegible] It is clear therefore that all these races possess a definite selective advantage [illegible] compared with ourselves.

I have not time to deal with other indications of racial differences that are appearing in regard to this complex system of Rh antigens. Moreover I should be afraid of being out of date in a month or two if I tried. It is safe to conclude however that they too will contribute notably to the study of the origins and relationships of mankind.

SUMMARY

All the blood groups show racial and geographical differences in their frequencies. The classical A B O groups are especially valuable as an anthropological index because they are entirely determined by heredity in simple in their inheritance and must have at best very slightly adapted to disease. The British Isles are notably variable in the frequency of A. The Highland Scots, the Irish and the north Welsh have with Iceland the lowest frequency of A in Europe. The southern English are relatively high in A and the northern English intermediate. The southern Welsh and the people of Cornwall do not differ from the southern English.

The Rh series of antigens is complex genetically, though one particular antigen is much more important practically than the others because it is responsible for the great majority of instances of erythroblastosis fetalis. Its presence or absence corresponds to the Rh positive and Rh negative categories of the original simple story. From the evolutionary point of view Rh is totally different from A B O for there must be strong selection against the Rh negative gene. The populations of Europe and North America must be in highly unstable equilibrium. There are lower Rh negatives amongst the negro population of North America and they are almost entirely absent amongst certain American Indian tribes, Australian aborigines, Papuans, Indonesians, Chinese and Japanese. These races therefore possess a definite selective advantage as compared with ourselves.

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THE LEUCOCYTE COUNT IN DENGUE

BY SURGEON LIEUTENANT-COMMANDER V. T. C. HUGHES, R.N.V.R.

The blood picture in dengue is characterized by a leucopenia with a relative increase in the mononuclear elements but without a shift to the left in the neutrophils.

This statement is quoted from *Bound Ann. of Medicine Bulletin* 13 87 in which it precedes a detailed description of the invariable shift to the left occurring in scarlet fever. The difficulty is explained in an abstract from a paper by Sabin, Philip and Paul [1]. The original paper gives a detailed account of investigations of cases of experimentally transmitted

[illegible] not app[illegible]

[illegible] from [illegible] the left [illegible] He [illegible]

[illegible]

[illegible] mild [illegible]

(4) A modification [illegible] patients was [illegible] quickly healthy the signs [illegible]

(5) The clinical pic[illegible] with [illegible] pains in back and [illegible]

[illegible]

Sixty Schilling and [illegible] of the illness. Those from six [illegible]

As most patients did [illegible] it was unusual for the count [illegible] total leucocyte count and the [illegible] lymphocyte [illegible] normal from the third day [illegible] usually [illegible] normal between the sixth and eighth [illegible] Totals [illegible] 3,000 cells per cubic millimetre [illegible] not infrequent and when [illegible] it was usual for the total to fall below 5,000 at some stage of the illness.

The lymphocyte count was low by the second or third day although it [illegible] fall below 1,000. The return to normal limits usually preceded that of the neutrophils.

There appeared to be no characteristic change in the count of monocytes or eosinophils although the latter were less frequent in the first two days of the disease.

The count of neutrophils fell in all patients after the second day and was usually below 2,000 at some stage. The lowest level sometimes occurred on the third day but the return towards normal often did not begin until the fifth or sixth day.

The count of segmented neutrophils always fell to a low level commonly below 1,000 cells. This change had often begun on the second day and was always well advanced on the third.

[illegible] was invariably greatly increased [illegible] days [illegible] with the fall of the [illegible] phil [illegible] portion to the count of segmented cells on the third or fourth day [illegible] have [illegible] number of segmented cells on the third or fourth day [illegible] increased initially but not to the same extent as [illegible] so [illegible]

[illegible] corresponding shift to the left with an increase in the [illegible] eosinophils. This was at its maximum between the second [illegible]

The [illegible] count slowly returned towards normal slowly recovery was often still incomplete [illegible] the tenth day

Turk cells were frequent during the convalescent stage

TABLE SHOWING THE CHANGES IN THE LEUCOCYTE COUNT IN SIX CASES OF DENGUE

Counts per cell per cubic millimetre

Case	Day of illness	Leucocytes total	Polymorphonuclear cells	Juvenile cells (neutrophil)	Stab cells (neutrophil)	Segmented cells (neutrophils)	Lymphocytes	Monocytes	Eosinophils	Basophils	Differential groups Percentage of neutrophils 1	2	3	4	5
[illegible]	[illegible]	12457	6500	460	4280	1760	5600	375	—	—	76	15	7	2	—
	3	7800	4120	234	1872	1014	3580	844	156	—	68	20	7	7	—
	4	8598	3830	254	2378	1188	2060	532	112	66	68	21	9	2	—
	5	4700	2162	—	1269	893	1833	517	188	—	60	16	2	2	—
	7	8100	3481	162	1701	1619	3242	972	241	162	55	21	18	6	—
	10	8400	3108	252	1008	1848	4200	872	252	168	40	30	20	8	2
[illegible]	[illegible]	9200	7270	174	1200	5898	1010	920	—	—	24	18	30	9	—
	4	6300	1827	378	756	693	3654	504	315	—	61	30	6	3	—
	7	4400	2110	132	1143	835	1630	616	44	—	60	34	6	—	—
	9	12800	6912	128	1152	5632	4992	512	384	—	18	48	30	4	—
[illegible]	2	4190	3341	500	1680	1752	2125	62	62	—	46	38	12	4	—
	3	9400	1292	272	544	476	1700	408	—	—	64	30	16	—	—
	5	2475	1000	250	350	400	1225	250	—	—	38	32	10	—	—
	7	4700	1034	235	141	658	3572	94	—	—	32	46	22	—	—
	10	7200	2448		792	1656	4176	504	72	—	37	37	21	5	—
[illegible]	1	1700	1732	450	457	825	1883	75	—	—	43	34	23	—	—
	4	2800	1456	528	620	510	1008	146	—	—	66	30	4	—	—
	6	1200	1488	88	954	476	1488	204	—	—	37	63	—	—	—
	8	6400	1280	128	256	896	4420	700	—	—	30	55	15	—	—
[illegible]	1	8700	7275	688	3337	3249	1650	480	95	—	55	26	19	—	—
	2	5000	1150	600	150	1050	1450	250	100	50	66	26	8	—	—
	3	5000	4450	450	1300	700	2000	350	200	—	71	25	4	—	—
	[illegible]	8100	3483	423	1530	1530	3483	810	324	—	57	18	20	5	—
[illegible]	1	2600	1482	312	390	780	1040	78	—	—	76	20	4	—	—
	5	3000	1764	510	327	927	1513	93	—	—	54	37	9	—	—
	7	7000	2800	1125	1050	675	4200	300	150	—	74	24	2	—	—
	8	4400	1408	132	308	968	2288	704	—	—	26	50	19	6	—
	11	5000	2385	242	477	1696	2810	105	—	—	29	28	33	9	—

CONCLUSION

The changes in the blood picture correspond with those found by Simmons in his cases [illegible] dengue. There is no essential difference from those described by Sabin in [illegible] malignant fever

The leucocyte count is therefore unlikely to be of assistance in distinguishing the two

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1. [illegible] Medical Association Jan 18 July 1944 2. Simmons Journal Philippine [illegible] 1944 3. Royal Naval Medical Bulletin No 13 87

PRIMARY TUBERCULOSIS IN YOUNG ADULTS

By Surgeon Captain W. [illegible] R.N.V.R.

Primary tuberculosis may be defined as the [illegible] primary [illegible] is first infected by tubercle bacilli. In contrast to [illegible] primary tuberculosis has certain pathological features which [illegible] independent both of the organ involved and of the age of the individual [illegible] briefly are: that the tissue reaction is initially a simple inflammatory [illegible] tubercle formation; that there is a pronounced tendency subsequently [illegible] caseation; and that the infection propagates along lymphatics to the [illegible] become similarly inflamed, necrotic and later caseous. Sometimes from the [illegible] glands further lymphatic spread occurs consecutively so that great areas of lymphatic [illegible] may quickly become involved. Finally it is also characteristic of primary tuberculosis [illegible] ultimately calcification and sometimes ossification takes place in either both components of the primary complex (primary focus and glandular component).

The liver is of course the organ involved in the very rare congenital primary tuberculosis. Skin, eye and ear are exceptional sites. In countries such as this where [illegible] prevalence of bovine tuberculosis tonsils and gastro-intestinal tract are not infrequently primarily infected, none the less in England probably more than 90 per cent of [illegible] in the lungs.

There exists to-day a considerable basis of knowledge of the pathology of this [illegible] of its sequelæ; there exists also consensus of opinion that primary tuberculosis [illegible] in young adult life. At this phase in life, however, in contrast to childhood, [illegible] the prevalence of the lesion, of its prognosis, diagnosis and treatment is comparatively scanty. It is our purpose to discuss certain relevant aspects of the pathology of primary tuberculosis, and then to present such information in regard to prevalence, diagnosis, treatment and prognosis of the lesion in young adults as has been obtained from a study of naval cases in the last five years.

Perhaps the most important factors which differentiate between the pathological consequences of primary and subsequent tuberculous infection in an individual are immunity and allergy. Natural immunity, the inherent ability of the body to restrain the bacilli and bring about the death of the tubercle bacillus on first contact with it, differs greatly in different species of animals. The horse, rat, sheep and goat are highly resistant, the guinea pig, monkey and man are resistant in less degree. Among the races of man natural and acquired immunity also vary. It was for example noted among Senegalese in the last war when these natives came to Europe that many cases of rapidly fatal tuberculosis had developed. A part of the primary and early post primary types developed. The explanation suggested in the 1920s was that these men had probably not been infected in childhood and had not therefore developed acquired immunity. This was thought adequate to account for the high mortality and the most prevalent type of the disease. That this was not the whole truth became evident when research in the Rand in South Africa was published in 1934. There although nearly three quarters of the adult natives came to the mines having in the past been infected (as shown by the Mantoux reaction) yet they often succumbed to the [illegible] loss of the same primary and early post primary types. Indeed post-mortem [illegible] cases demonstrated in nearly half of the fatal cases that a defined primary complex was present. The disease followed a catastrophic course with massive caseation of the bronchial and abdominal glands, and with hæmatogenous metastatic deposits in liver [illegible] and meninges whether the individual's reaction to tuberculin was positive [illegible] arrival at the mines. In contrast tuberculosis commonly remained quiescent or [illegible] arrested in natives remaining in their kraals. Further among white miners the outcome of the disease and its type were quite different. Not only [illegible] white man in the same environment responded differently to the tuberculosis [illegible] but the severity and type of the infection in the negro was influenced by [illegible] The U.S.A. provides a further example. The mortality from tuberculosis [illegible] negroes varies in different states from approximately three times [illegible] population. Moreover in nearly one half the cases in negroes [illegible] mortem shows the primary type of tuberculosis to have been fatal. [illegible]

1949). [illegible] it was once thought to be a [illegible] factor causing [illegible] American negro often lives a [illegible] squalid life. [illegible] absence of calcified primary [illegible] negroes [illegible] and subsequently (Edwards 1940 [illegible] that the prevalence of unsuspected reinfection-type tuberculosis [illegible] only [illegible] black than in the white population. What are the [illegible] for these differences in the [illegible]? Racial [illegible] and acquired immunity to tuberculosis [illegible] that [illegible] ability to develop [illegible] of the disease and [illegible] rabbits is relevant at this point. [illegible] to the bovine [illegible] human [illegible] to human bacilli multiply [illegible] ten [illegible] they multiply even more rapidly [illegible] bacilli. There [illegible] others [illegible] What [illegible] results from [illegible] effective [illegible] Why [illegible] of tubercle [illegible]

The [illegible] phenomenon [illegible] rapidly [illegible] years ago this [illegible] the tissues [illegible] responsible [illegible] in the lung [illegible] bronchial [illegible] (adult type) [illegible] The work [illegible] Hypersensitivity [illegible] being [illegible] cellular phenomenon [illegible] demonstrated in [illegible] Many [illegible] however. [illegible] does [illegible] to act and a [illegible] superinfection? And at what stage in [illegible] the primary lesion [illegible]? Or does natural immunity continue [illegible] acquired immunity [illegible] quite a different [illegible] pure immunity [illegible] infection by fresh bacilli [illegible] against bacilli liberated by [illegible] healed lesions in the body? [illegible] another granuloma—syphilis—the answer would seem to be no. Some [illegible] (1941) partly answers some of these questions. In a highly inbred [illegible] showed that families could be produced of which some were uniformly [illegible] uniformly highly susceptible and others intermediate in immunity. [illegible] determined solely by genetic constitution which was decisive under [illegible] respiratory tuberculous infection in deciding whether the rabbits acquired progressive primary tuberculosis, localized chronic adult (reinfection) type pulmonary tuberculosis, or disease intermediate between these two types. These experiments indicated not only that with risk of infection susceptibility to develop tuberculosis at all is inherited, but also that infection having taken place both natural and acquired immunity may influence the type of lesion formed on first contact with tubercle bacilli. It would therefore seem probable that acquired resistance is essentially similar to and a reinforcement of natural resistance. The most outstanding human twin and family study of our time (Kallmann and Reisner 1944) supports and extends this concept to man, showing that not only are genetic influences a major determining factor whether or not manifest tuberculosis is contracted, but that in addition they are even more decisive in determining the resistance of the individual to and the type of established disease which develops. The practical application of this is that if it is impracticable to segregate a case of tuberculosis it is advisable not to have the nearest blood relatives take care of him; that for this purpose a husband or wife is far more suitable than parent or child or brother or sister. Similarly

those who undertake tuberculosis nursing and [illegible] from famine free of a history of tuberculosis

Fluorography in the Royal Navy has shown that among the [illegible] healthy the incidence of calcified primary infections increases with age between [illegible] 15 and 50 from which it may be deduced either that the [illegible] of primary [illegible] was higher in childhood forty years or so ago and has since [illegible] or that [illegible] with increasing frequency occurred in adolescent and young adult life [illegible] or that both propositions simultaneously are true. Repeated tuberculin [illegible] comparable populations has shown that in these age groups the level of tuberculin sensitivity was falling steadily in many different parts of the world in the decade [illegible] this was still true in most areas that at the age of 45 the percentage of [illegible] reactors approached 100. All individuals in civilized communities sooner or later become infected though the numerous measures to prevent infection intervened in the last [illegible] years have succeeded in displacing the first infection from childhood towards young adulthood. This is exactly what one would anticipate would happen if the level of tuberculosis in the community had persistently and appreciably decreased—a further significant [illegible] and well result in recognizable numbers of adults remaining uninfected throughout their lives. In 1938 we learnt (Prophit Research) that approximately one third of conscripts aged 15 and 16 had not been infected on entering the Navy. We do not know how soon they become infected for continued Mantoux testing has been impracticable during the war. From studies of nurses, medical and college students elsewhere it is known that primary infection commonly occurs without any recognizable accompaniment save a change in the Mantoux reaction. Only a small minority of those so infected become recognizably ill. Fluorography among the apparently healthy reveals more and in Table I are set forth figures giving the incidence of male cases revealed by first fluorography in which the radiological characteristics and the results of subsequent investigations were such that active primary tuberculosis was the probable diagnosis.—

TABLE I

Years	15–17	18–[illegible]	[illegible]	24–26	27–30
Cases per 1,000 examined (active primary tuberculosis)	2·3	3·4	5·1	1·9	0·3
Cases adult type pulmonary tuberculosis per 1,000 examined	4·1	[illegible]	1	10·2	11·7

For reasons mentioned it is certain that the proportions of cases of primary (active) tuberculosis are only small fractions of all such cases which occur in these age groups in the Royal Navy.

Most primary tuberculous infections in young adult life are unremarkable by symptoms, signs or radiological abnormality. None of the various clinical manifestations in Table I in other than a small minority of radiologically recognizable cases of primary infection.

Perhaps the most common clinical manifestations are vague ill health, a listlessness to work, irritability and anthralgia and sometimes transient or prolonged though rarely severe fever. In this an acute illness like influenza occurs by [illegible] of bronchitis is simulated. It is not uncommon to find in British naval personnel the common clinical consequences of bronchial obstruction, partial or complete, as a result of primary tuberculosis in young adults. Much more commonly in females than in males (in the [illegible] groups) erythema nodosum marks the onset of primary tuberculosis. Rarely with an exudative multiform or episclerite accompany the illness. Pleurisy with effusion is not the most common early post primary tuberculous [illegible] but it is [illegible] in Montreal relatively more frequently in Scotland and Northern Ireland than in English and [illegible] cultural stock than in those serving from England, was in the series of wholly Indians than in those of the poor.

Physical signs of primary infection in [illegible] young adults which these [illegible] above mentioned sequelae are excluded. Occasionally [illegible] impaired percussion note, diminution of air entry and rales may be detected over the chest which Dr Spain's series also be positive. Cutaneous strip in the absence of clinically developed obesity [illegible] a young adult accompany primary tuberculosis. The tuberculosis lymphadenopathy of primary infection may of course be demonstrable when there is much [illegible] abdomen or neck is any [illegible]

Radiological [illegible] are not constant [illegible] demonstrated [illegible] is seen its [illegible] characteristic [illegible] a somewhat [illegible] of the [illegible] It should be [illegible] the radiological [illegible] of this [illegible] difficult and needs [illegible] A [illegible] probably [illegible] peripheral focus of the primary [illegible] lungs [illegible] usually [illegible] Its appearance [illegible] rule [illegible] small [illegible] transient [illegible] and late [illegible] so that [illegible] transition [illegible] radio- [illegible] components of the complex [illegible] pulmonary lesions (e.g. Assmann's or [illegible] clinically or radiologically identified [illegible] complex may no longer be apparent.

With primary infection tubercle bacilli may be found in the sputum or the gastric juice [illegible] in other ways. They are usually scanty and require culture or animal [illegible] for their demonstration. Fever after exertion, elevation of the sedimentation [illegible] thermogram are inconstant. The Mantoux reaction becomes positive in six [illegible] after infection, and often a considerable hypersensitivity soon develops. If [illegible] tuberculosis supervenes the reaction may again become negative. In nearly all [illegible] pleurisy with effusion hypersensitivity obtains, so that an extensive necrotic ulcer may be produced by injudicious use of the more highly concentrated tuberculin injected intradermally.

Tuberculous pleurisy or pericarditis with effusion are in young adults much more frequently post-primary complications than in children; the reverse is true of extensive lymphogenous or haematogenous dissemination, and of metastatic infection of bones or joints. The incidence of these sequelae is greatest in the first two years after primary infection and decreases rapidly thereafter. It is also a fact that after primary tuberculosis in young adult life direct and continuous transition to adult type pulmonary tuberculosis or to tuberculous pneumonia are not infrequent; in childhood the former is a rarity. Epituberculosis on the other hand occurs only in childhood and infancy. In our experience Scottish and Irish ratings seem considerably more prone to develop any of these post-primary tuberculous complications than are the English.

Bronchial obstruction, partial or complete, with the sequelae respectively of local emphysema or atelectasis and ultimately bronchiectasis, occur in young adults but are much more often the consequence of primary tuberculosis in childhood. It seems probable that the extra space available for enlarged infected mediastinal glands in the young adult chest is the determining factor here.

The diagnosis of primary tuberculosis infection can only accurately be made as a result of frequently repeated Mantoux or other tuberculin reactions—the transition from negative to positive occurring some six to ten weeks after the infection occurs. Occasionally a delayed positive reaction may be observed, and so more accurately time the moment of infection than can routine testing. Hypersensitivity to tuberculin in adolescents and young adults after primary infection has an uncertain duration—it is of little diagnostic assistance. Mediastinal lymphadenopathy clearly demonstrable on X ray examination, which does not increase appreciably in size, and which persists for some months and then commonly calcifies, is very strongly suggestive of primary tuberculosis in a young adult. When such a lesion is combined with a peripheral focus having the features already described the diagnosis is made more sure, and if a post-primary complication also is observed the nature of the lesion becomes virtually a certainty. The demonstration of tubercle bacilli, when that is possible by any method, will be final proof of the diagnosis. The clinical features of the disorder are so inconstant and vague that their presence or absence is of little assistance.

The great majority of cases of primary tuberculosis in young adults have in the past

[illegible] course without [illegible] pt[illegible] forms of the [illegible] which thus heal though [illegible] the lesion is accidentally [illegible] by insisting upon [illegible] such as the [illegible] the full [illegible] conversion [illegible] and light [illegible] years [illegible] examination [illegible] diagn[illegible] should [illegible] fell well [illegible] while [illegible] and the presence [illegible] some [illegible] period [illegible] escen[illegible] will [illegible] When [illegible] disease [illegible] extension [illegible] appropriate therapy [illegible] disorder followed [illegible] sanatorium therapy [illegible] great majority of such cas[illegible]

The prognosis [illegible] primary tuberculosis in young [illegible] favourable particularly if their [illegible] is satisfactory. This implies that repeated exposure to infection is avoided, that adequate leisure and good food are available and that undue stresses such as continued very hard exertion, tropical service and the like do not coincide with the early healing stages of the lesion. A family history of tuberculosis probably makes the prognosis appreciably worse and so also does the presence of tubercle bacilli in the bronchi, progression of the lesion to adult type tuberculosis, or the development of a post-primary tuberculous complication such as pleurisy with effusion or hæmatogenous extension of the disease.

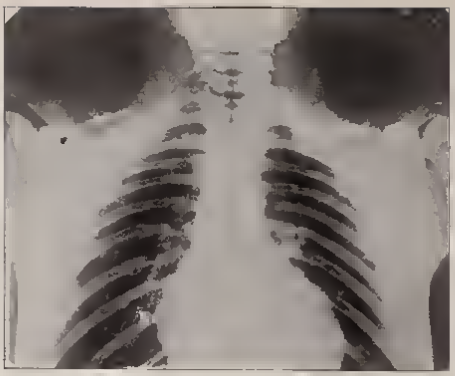
It seems likely that the continued employment of fluorography in the Royal Navy will greatly lower the risk of infection with tubercle bacilli during the course of a sailor's service. It may be anticipated therefore that primary infection will be increasingly delayed into adult life so that more trained men will from time to time be discovered to be thus abnormal. It is therefore desirable not only to recognize and appreciate primary tuberculosis at its true worth and so treat individual cases appropriately but, as a corollary, to formulate a policy for the Service which will avoid wastage of skilled or potentially skilled men and which will at the same time permit the disorder satisfactorily to become arrested in the great majority of cases.

CLEIDO-CRANIAL DYSOSTOSIS

By Surgeon Commander J K MADDOX, R.A.N.R.

This dystrophy, no longer considered invariably as hereditary, is still sufficiently uncommon (it is doubtful whether 100 cases have yet been described) to warrant a record of fresh case reports. Its chief interest lies in its symptomless nature and in the adaptation to hard physical work exhibited by nearly all those affected. It is apparent that the clavicle, which appears as a strong link in the shoulder girdle of higher mammals who are intended to climb for their food, can be virtually dispensed with by civilized man.

Described first in 1766 by Morand and by Barlow in 1883, the main observers have been British or French. The syndrome was named by Marie and Sainton in 1897. Of its four components as stated by Fitchet, namely aplasia of clavicles, exaggerated transverse diameter of cranium, delay of ossification of fontanelles and hereditary transmission, only two, the first and the third, are worthy of retention. A better tetralogy would be dysplasia of clavicles, delay in closure of skull sutures, defective development of the base of the skull and multiple vertebral anomalies. Frontal and temporal bossing of the calvarium is also so constant a feature as to be noteworthy, although it probably constitutes a non-specific compensatory associate of delay in closure of skull suture, e.g. in rickets, congenital syphilis



[illegible]

[illegible]

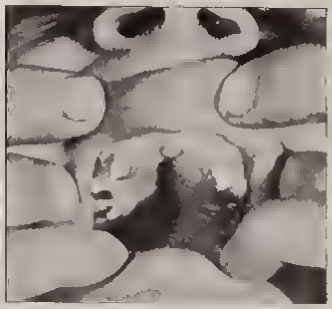


Fig. 5

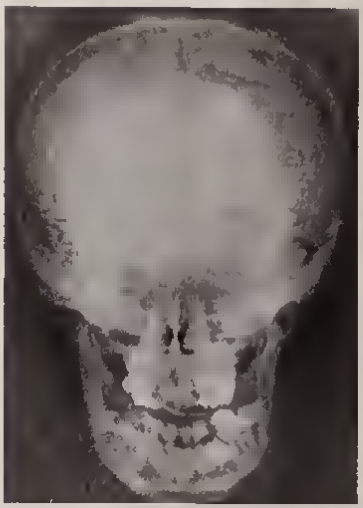
[illegible]

4

5

Fig. 4. [illegible]

Fig. 5. [illegible]



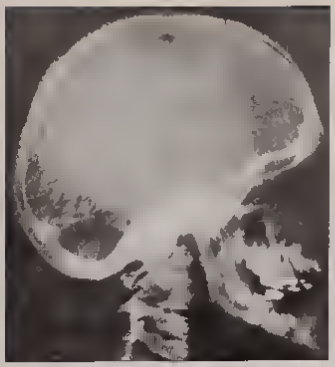


Fig. 7

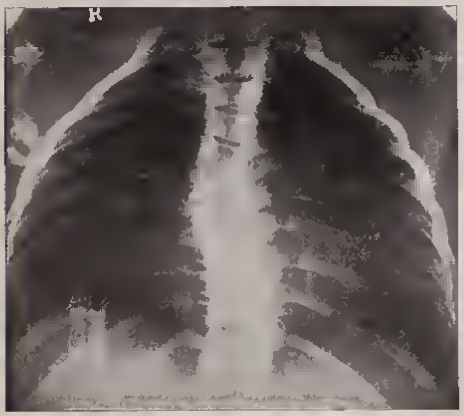


Fig. 8

[illegible] Multiple interfrontal sutures widening, of fronto-parietal and [illegible] Wormian bones, the peaking, of the petrous temporal bone behind the pt [illegible] Note [illegible] present in left parietal bone

Fig. 8 Showing [illegible] of normal arches in upper thoracic region and kyphosis [illegible] segment

[illegible]

[illegible] and the [illegible]

Discussion

Discussion [illegible] has given rise to [illegible] of [illegible] morphologically [illegible] was first [illegible] [illegible] Association with [illegible] logically at a very early [illegible] (6th week). In the adult [illegible] from the viewpoint of comparative anatomy [illegible] that [illegible] impairment is incomplete

[illegible] calcaneus and terminal phalanges [illegible]

[illegible] dium [illegible] to [illegible] The upper [illegible] all their [illegible] skeletal characters [illegible] tary syndrome [illegible] of the hypothesis [illegible] tion of dwarfism [illegible] some [illegible] ments exceeds in proportion [illegible] should [illegible] upon its [illegible] the best [illegible] hold that [illegible] increasing [illegible] than by a [illegible] that the vault opens like the petals of a flower but [illegible] in the presence of so many other examples of imperfect [illegible] the skeleton such a sequence is unlikely Such metabolic study [illegible] fruitless There is no record as yet of any attempt to determine [illegible] balance

The physician and radiologist are chiefly interested in its clinical [illegible] complementary types of bone dystrophy its compatibility with [illegible] longevity absence of disability and occasional hereditary character [illegible] reassure the affected individual that far from being physically [illegible] he possesses a unique facility for escape either from a strait-jacket [illegible] shuttle or down a drainpipe

Summary

A highly characteristic but non familial example of cleido-cranial [illegible] illustrated with a full description and illustration of the skeletal characters [illegible] young man of 21 years.

I wish to express thanks to the Director of Naval Medical Services [illegible] publish this case report to Surgeon Lieutenant Commander (D) R[illegible] for his description of the dental findings and to Professor Lambie of the [illegible] and Mr Woodward Smith for assistance with the illustrations

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D L C Hereditary Cleido cranial Dysostosis *Lancet* 2 n 19 1941 [illegible]
ness Cleido cranialis *Lancet* 1935 2 N 6 August 10 303 [illegible]
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Congenital Absence of the Clavicles (Hereditary Cleido cranial Dysostosis) *Roentgenology* 1927 18 No 4 Oct Dec 322 STILL J E and W[illegible]
cranial Dysostosis *British Journal of Surgery* 1937 10 [illegible]

SCIATICA[1]

BY SURGEON CAPTAIN LAMBERT ROGERS R.N.V.R.

SCIATICA may be defined as pain in the area of distribution [illegible] sometimes called Cotunnio's disease after a Neapolitan physician who in 1764 [illegible] ischias nervosa postica Its signs and symptoms are [illegible] with a description of them Nor shall I carry you with me [illegible] which have been held as to its cause Though I must refer briefly [illegible]

I propose to present evidence that so called idiopathic sciatica [illegible] must not forget that sciatica may be a symptom of advanced [illegible] [illegible] but it is not with symptomatic sciatica that we [illegible] but with the common variety so frequently seen in quite [illegible] sciatica and [illegible] is [illegible]

---

[1] Presented before the N.V.H. Bureau on 6 March 1941 [illegible]

[illegible]

[illegible] Athens

[illegible] anners

[illegible] for Measu[illegible]

[illegible] rather than

[illegible] the [illegible] whether [illegible] the [illegible] is

[illegible] findings [illegible] needle)

[illegible] be [illegible] and [illegible] is an [illegible] intr[illegible]

[illegible] disc[illegible] In 1896 Theodor Kocher of [illegible] succumbed to multiple injuries after [illegible] on his feet Kocher was surprised to [illegible] an extrusion of nuclear material from a [illegible] was no fracture of the spinal column [illegible] in London by Victor Horsley at Queen [illegible] by Cushing in the States After this it [illegible] in 1925 Charles Elsberg of New [illegible] had operated upon Among [illegible] hospital as chondromas myxomas [illegible] It became apparent that [illegible] from ruptured discs In 1930 a case [illegible] in detail by Alajouanine and Petit-Dutaillis [illegible] Weber and Barr in Boston had reported a series of such [illegible]

We [illegible] that [illegible] and an extrusion of nuclear material is a comm[illegible] that the great majority of cases of so called idio pathic [illegible] such extrusion It does not follow however that all th[illegible] Someone once truly said no one has ever died [illegible] sciatica all his life In other words the irritability of the [illegible] we say the sensory side of it to lose its excitability [illegible] with the sciatica for long enough he ultimately gets over it [illegible] that carries a minimum of risk to the patient [illegible] of cases I have had no mortality from

---

This [illegible] 5063 [illegible] served when the Royal College of Surgeons [illegible] bomb [illegible]

[illegible] always to consider [illegible] conclusion [illegible] emphasis [illegible] the conclusion that [illegible] must then [illegible] intervertebral [illegible] relieves [illegible] fraction of [illegible]

Many other [illegible] magnetism and ele[illegible] I remember a story [illegible] arrival at the [illegible] before the General [illegible] mind what you [illegible] told the General [illegible] his instructions [illegible] face putting a sheet [illegible] iron. This relieved the sciatica [illegible] reputation and his popularity with the [illegible]

I would emphasize that the [illegible] are due [illegible] that we now have a short cut to treatment [illegible] intervertebral disc. [illegible] operation a sufferer may be back in [illegible] short time. Why the [illegible] injuries is an interesting point. [illegible] history of injury and [illegible] is well known. The sciatica may be [illegible] operation. I have [illegible] young man who had fallen into [illegible] ks before. He had been very gouty [illegible] and I do not think he had risk [illegible] in falling. The sciatica was a [illegible] exposure as it has so often been in the past. The patient had such a clear cut disc syndrome however and such intense pain that I felt [illegible] to operate and found a large extrusion [illegible] pinching up the nerve root. He was relieved [illegible] by the removal of the disc and [illegible] of the nerve root. It may be that the other causes of rupture of the discs in the lumbar sacral region than some form of violence. The upright posture and possibly also as Professor F. E. Smith has suggested to me the pelvic factors may play a part. This is all rather speculative but I have no doubt in the course of time we shall get more light on why these discs are so commonly ruptured. It is interesting to look at this disc problem from the viewpoint of comparative anatomy. Some animals have an essential nucleus pulposus. The vertebrae and the intervening discs of the swordfish must be put under great compressive strain when it drives the sword home but as the nucleus pulposus of this fish shows no bony extrusion cannot occur. However this is rather a learned problem and I must not let my emphasizing that the condition is unusual that sciatica (so called) in this region is due to a radiculitis and that this radiculitis is commonly due to an extrusion from an intervertebral disc.

Summary and Conclusions

My theme has been to demonstrate that [illegible] If this is so then any lesion of a root of the [illegible] from the spinal cord and its union with its fellows [illegible] of producing sciatica. I have demonstrated that [illegible] the course of a sciatic nerve root either within the [illegible] that extruded nuclear material from intervertebral discs may be known. [illegible] is inevitable that sciatica is a radiculitis. The commoner cause of this radiculitis is from an intervertebral disc lesion.

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Keiper Th 1896 *Unf Centralbl M f Chir* 1 415 Mixter W J and Barr J S 1934 *New Eng Journ Med* 211 210 Smith Petersen M N 1929 *Brit Med J* 1 604

Reviews.

[illegible]

[illegible] 1896

[illegible]

[illegible]

[illegible]

value [illegible] and of the [illegible] system and in [illegible] chapter is perhaps the [illegible] its clinical significance [illegible]

No attempt is made [illegible] diagnosis, examination [illegible] encephalography are entirely [illegible]

It is easy to read and [illegible] specialty may be [illegible]

LEWIS'S 1844 1944 [illegible]

This volume is a [illegible] publishing. This famous [illegible] ledge of which it can be [illegible] This as Osler said. To study the [illegible] study books without patient [illegible] of others at their bedside.

May we offer our best wishes [illegible]

BROMPTON HOSPITAL REPORTS. [illegible]

Research Department [illegible]

This annual collection [illegible] Staff manifests the [illegible] the Year Book [illegible]

A trend in medicine [illegible] surgical intervention in [illegible] still seek assistance [illegible] Naval, War wounds [illegible] and should prove [illegible]

Brock continues his [illegible] of infected material [illegible] held. His other paper [illegible] leading, and does to the [illegible]

Surgeon Captain [illegible] radiography. The bill [illegible] whilst retained on [illegible]

Not least in this [illegible] and its significance in the [illegible] than professional [illegible] as much to the study [illegible] in tuberculosis [illegible]

PYE'S SURGICAL HANDICRAFT. [illegible] Hamilton Bailey [illegible] 1944

Pp. 628 + xi. 724 [illegible] Wright. Price [illegible]

Mr. Hamilton Bailey [illegible] less than fifty [illegible] is proof that one of the fourteenth edition of Mr. [illegible] his collaborators that busy people take pains [illegible]

This is an improved [illegible] of the original [illegible] illustrations [illegible] transit and reproductions of photographs. Many of these are clearer and [illegible] illustrations [illegible] have been surgical [illegible] but it is [illegible] an adequate picture of the art of [illegible] including the number of hospitals, treatments in the [illegible] figures in the hospital as a whole. This is done with the [illegible] collaboration [illegible] with nursing staff, the admission [illegible] are [illegible] instances in such a [illegible]

This classic medical teaching, as available in the [illegible] expected to have [illegible] easily handled and presented on excellent paper.

THE RESULTS OF RADIUM AND X RAY THERAPY IN MALIGNANT DISEASE. Report of the British Institution Manchester. Compiled by Robert Paterson, M.D., [illegible] and Martin Russell, M.D. and Staff. Final Report. 1946. Pp. 148. Published by [illegible] the British Institute of Radiology, 7 [illegible]

A dramatic [illegible] of the [illegible] in the medical [illegible] in which the importance of [illegible] technique [illegible] will [illegible] earlier survival. The point is [illegible] by the patient and the [illegible] by the [illegible] be expanded from the [illegible] treatment [illegible] report of the [illegible] Institutes and the [illegible] medical [illegible] benignant [illegible] is recognized. The [illegible] of knowledge about cancer [illegible] the results of cancer treatment [illegible] well set out in the first part of the report [illegible]

The [illegible] which is nearly two thirds of the whole [illegible] to medical [illegible] engaged in the treatment of cancer as [illegible] of [illegible] the body and analysis of results [illegible] report relative [illegible] be invaluable in giving results of cancer [illegible] very [illegible] here details of techniques are to be [illegible]

Occupational Therapy. By Phyllis Earlington C.S.I. M.A.O.T. [illegible] Therapy [illegible] Drawing, by Jan Hall [illegible] 40 [illegible] London: H. K. Lewis & Co. [illegible]

[illegible] when by an Occupational Therapist [illegible] same [illegible] is a small sum a day [illegible] Library [illegible] equal to a under cycle [illegible] that [illegible] when there are still [illegible] medical [illegible] understand the physical [illegible] aspects [illegible] [illegible] divided [illegible] confidence [illegible] [illegible] graphs could catch the eye [illegible] with [illegible] drawing because she has [illegible] all [illegible] chose the alphabet on [illegible] for [illegible]

[illegible] little pamphlet and will well repay [illegible]

[illegible] Bailey, F.R.C.S.I., Surgeon Royal Northern Hospital [illegible] Surgeon St. Vincent's Clinic and Rotunda [illegible] Hospital. 2nd Edn. February 1946. [illegible] pp. [illegible] photographs and 18 illustrations. Edinburgh: E. & S. Livingstone. [illegible]

The [illegible] though the Sick Berth Branch are not mentioned in the title [illegible] surgical appointment medical patients [illegible] more photographs accompany by [illegible] supplemented by some advice and interesting [illegible] rarer dry [illegible] such as paronychial infection [illegible] the maxilla and meningoceles [illegible] the excellent teaching work. The publishers [illegible]

[illegible] E. & S. Livingstone Ltd. 17 Teviot Place [illegible] This is an interesting illustrated [illegible] publication [illegible] This is a new issue which is started publical on [illegible] Rheumatism. It is published by the Kolls House [illegible] of the Chartershouse Rheumatism Clinic [illegible] leaders and is sold on subscription in the [illegible]

[illegible] *The Maker Up* (the trade journal for clothing, [illegible] Many hints are claimed to have been [illegible] a special Oxford Weave cloth will [illegible] man in water and retains its buoyancy [illegible] jacket for bomber crews against [illegible] the cockpit. The German [illegible] success and there is [illegible] confidence [illegible] understand shortly be available [illegible] manufacture of waterproof and other [illegible]

News of the Service

OBITUARY

[illegible] VARNNS who received her general training at the Metropolitan [illegible] VARNNS died at R.N. Hospital Haslar, Kent, at the age of [illegible] Hospital, Plymouth and Malta, and in 1939 was mentioned in the first [illegible] was a hard and lonely life to all her friends.

[illegible] and all those who came in contact [illegible] struck [illegible] by her thoughts for the [illegible] ed by her colleagues [illegible] and grief.

Surgeon [illegible] M.R.C.S. L.R.C.P. R.N. [illegible] H.M.S. Hospital on May 11 [illegible] R.N. Royal Naval Asylum [illegible] 15 1918 and transferred [illegible] February 21 1920. [illegible] commanded in February 1930. [illegible] Medical Officer 1930. He [illegible] Wednesday 11 T.N.D.

By the [illegible] his pass [illegible] all a very charm[illegible] and. Through [illegible] in his company [illegible] memories of [illegible]

His health [illegible] constant [illegible] to his loss.

Our sympathy [illegible] and sorrow [illegible]

HONOURS

Royal Red Cross

Temporary Surgeon Lieutenant-Commander A. J. Wright, M.R.C.S. L.R.C.P. M.B. [illegible] R.N.V.R. for services with [illegible]

Bar to Medal

Temporary Surgeon Lieutenant-Commander H. H. [illegible] M.R.C.S. L.R.C.P. R.N.V.R. [illegible] to personal [illegible]

Royal Red Cross, 2nd Class

Temporary Surgeon Lieutenant-Commander A. D. H. Eardley-Wilmot, M.A. M.B. [illegible] R.N.V.R. for services as Medical [illegible]

DEGREES

F.R.C.S.

Surgeon Commander [illegible] Perkins, D.L.O. R.N.

PROMOTIONS

Surgeon Lieutenant-Commander C. [illegible] McClintock to be Surgeon Lieutenant-Commander [illegible] from February 14 1946.

Surgeon Lieutenant J. [illegible] Corcoran to be Surgeon Lieutenant [illegible] March 31 1944.

Surgeon Lieutenant-Commander J. M. Hallett to be Surgeon Commander [illegible] April 1 1946.

Surgeon Lieutenant-Commander (D) [illegible] to be Surgeon Commander [illegible] April 10 1946.

Surgeon Lieutenant-Commander S. H. B. Tyrrell to be Surgeon Commander [illegible] May 1 1946.

Surgeon Lieutenant-Commander M. V. Hogg to be Surgeon Commander [illegible] May 1 1946.

RETIREMENTS, &c

Surgeon Lieutenant-Commander S. C. S. Cobb (Emergency) released [illegible] 1946.

Surgeon Lieutenant-Commander N. V. Ireland (Emergency) released [illegible] 1946.

Surgeon Lieutenant-Commander J. James (Emergency) retired [illegible] 1946.

Surgeon Commander (D) R. S. Wood (Retired) relinquishes [illegible] 1946.

Surgeon Captain (Retired) A. R. Thomas released February 28 1946.

Surgeon Captain A. [illegible] Stirling (Retired) [illegible] Medical Inspector [illegible] 1946.

Surgeon Captain (Retired) J. [illegible] Andry released March 15 1946.

Surgeon Captain (Retired) W. P. Avery released March 29 1946.

Surgeon Captain (Retired) H. [illegible] Barnes released April 1 1946 [illegible]

Surgeon Rear-Admiral (Retired) A. J. Heath reverted from Emeritus [illegible] April 1 1946.

Surgeon Captain (Retired) [illegible] released on S. Africa April 6 1946 [illegible]

Surgeon Commander (D) A. McPherson (Retired) released April 17 1946 [illegible]

Surgeon Captain (Retired) K. D. Bell released April 18 1946 [illegible]

Temporary Surgeon Rear-Admiral H. Milne released May 1 1946.

Temporary Surgeon Rear-Admiral [illegible] Wakeley released May 1 1946.

Temporary Surgeon Rear-Admiral S. [illegible] released May 1 1946.

Temporary Surgeon Rear-Admiral S. Richard A. Kirwan released May 1 1946.

Surgeon Captain (Retired) F. [illegible] released May 3 1946 [illegible]

Surgeon Captain (Retired) C. A. Hobbs released May 10 1946 reverts [illegible]

Surgeon Captain (Retired) C. M. R. Thielen released May 7 1946 reverts [illegible]

Surgeon [illegible] release cancelled temporarily.

Surgeon [illegible] V. Griffiths, Deputy M.D.G., [illegible] 1946, re-listed retired list.

Surgeon [illegible] placed on retired list (medically unfit) [illegible] August 4, 1946.

TRANSFERS TO PERMANENT LIST

Temporary Lieutenant C. St. J. Davies, R.N.V.R., to be Surgeon Lieutenant, R.N., with date [illegible] 28, 1943.

Temporary Lieutenant A. O. [illegible], R.N.V.R., to be Surgeon Lieutenant, R.N., with date [illegible] 5, 1941.

Temporary Lieutenant W. Hewitt, R.N.V.R., to be Surgeon Lieutenant, R.N., with date [illegible] 14.

Surgeon Commander C. J. Mullen (Energy), transferred to Permanent List, December 20, 194[illegible] [illegible] 1940.

Surgeon Commander C. G. Hunter (Emergency), transferred to Permanent List, December 20, 1945, with [illegible] 18, 1943.

Surgeon Lieutenant-Commander (D) A. J. Steple (Emergency), transferred to Permanent List, cancelled.

Temporary Acting Surgeon Lieutenant-Commander R. W. Tuffle, R.N.V.R., to be Surgeon Lieutenant, R.N., December 20, 1945, with seniority of April 17, 1945.

Temporary Surgeon Lieutenant-Commander (D) [illegible] to be Surgeon Lieutenant-Commander.

Temporary Acting Surgeon Lieutenant-Commander A. J. Barrett, R.N.V.R., to be Surgeon Lieutenant, R.N., December 20, 1945, with seniority of October 22, 1940, and reappointed (Emergency) to rank of Surgeon Lieutenant-Commander.

Temporary Surgeon Lieutenant A. C. Hamer, R.N.V.R., to be Surgeon Lieutenant, R.N., December 20, 1945, with seniority of September 1, 1940.

Temporary Surgeon Lieutenant R. St. C. Mooney, R.N.V.R., to be Surgeon Lieutenant, R.N., December 20, 1945, with seniority of August 15, 1940.

Temporary Surgeon Lieutenant N. S. Marsden, R.N.V.R., to be Surgeon Lieutenant, R.N., December 20, 1945, with seniority of January 9, 1942.

Temporary Surgeon Lieutenant H. W. Simpson, R.N.V.R., to be Surgeon Lieutenant, R.N., December 20, 1945, with seniority of July 21, 1943.

ROYAL NAVAL VOLUNTEER RESERVE

PROMOTIONS

Temporary Acting Surgeon Lieutenant-Commander N. V. Birrell to be Temporary Surgeon Lieutenant-Commander as from January 10, 1946.

Temporary Acting Surgeon Lieutenant-Commander J. Jackson to be Temporary Surgeon Lieutenant-Commander as from January 19, 1946.

Temporary Acting Surgeon Lieutenant-Commander C. J. Martin to be Temporary Surgeon Lieutenant-Commander as from January 15, 1946.

Temporary Acting Surgeon Lieutenant-Commander (D) W. Rodger to be Temporary Surgeon Lieutenant-Commander (D) as from January 12, 1946.

Temporary Acting Surgeon Lieutenant-Commander (D) F. W. King, Turner to be Temporary Surgeon Lieutenant-Commander (D) as from January 12, 1946.

Temporary Acting Surgeon Lieutenant-Commander (D) W. H. Weighell to be Temporary Surgeon Lieutenant-Commander (D) as from January 12, 1946.

Temporary Surgeon Lieutenant D. L. de Courcy to be Temporary Surgeon Lieutenant-Commander [illegible] 1946.

Temporary Surgeon Lieutenant J. A. W. Adams, to be Temporary Surgeon Lieutenant-Commander [illegible] 1946.

Temporary Surgeon Lieutenants R. S. P. Hawkins, S. A. James, J. H. D. Taylor, E. L. Nicolson, J. I. Bass, [illegible] W. J. Parke, J. [illegible] Taylor, H. J. Harris, I. P. Tudor, W. Rogers, J. I. Morton, W. S. Hannan, [illegible] J. H. I. Thomson, H. B. J. G. H. Wells, G. le M. J. Thomson, M. J. C. Davies, R. A. J. Hobson, [illegible] to be Temporary Acting Surgeon Lieutenant-Commanders as from March 31, 1946.

Temporary Surgeon Lieutenants (D) R. Dunsmuir, I. D. Hodgson, M. K. Burt, W. McKinnel, W. S. [illegible] K. Mc[illegible], R. H. Imbe, I. J. Bailey, W. B. W. Cross, J. B. Dimock, R. C. Simpson, H. Maw, [illegible] J. M. [illegible] to be Temporary Acting Surgeon Lieutenant-Commanders (D) as from March 31, 1946.

Temporary Acting Surgeon Lieutenant-Commander E. C. Farrell to be Temporary Surgeon Lieutenant-Commander as from January 26, 1946.

Temporary Surgeon Lieutenant R. C. S. Whitbel to be Temporary Surgeon Lieutenant-Commander as from January 26, 1946.

Temporary Surgeon Lieutenant J. C. Pritchard to be Temporary Surgeon Lieutenant-Commander as from [illegible] 1946.

Temporary Surgeon Lieutenant J. G. Williams to be Temporary Surgeon Lieutenant-Commander as from [illegible] 1946.

Temporary Surgeon Lieutenant H. S. Ferris to be Temporary Surgeon Lieutenant-Commander as from [illegible] 1946.

Temporary Surgeon Lieutenant A. B. Pitchard to be Temporary Surgeon Lieutenant-Commander as from [illegible] 1946.

[illegible] Surgeon Lieutenant R. S. I. Hawkins to be [illegible] Commander [illegible] 1946

[illegible] Acting Surgeon Lieutenant-Commander J. H. [illegible] from [illegible] 1946

[illegible] Acting Surgeon Lieutenant [illegible] W. [illegible] from [illegible] 1946

[illegible] Acting Surgeon Lieutenant-Commander [illegible] from March 1 1946

[illegible] Acting Surgeon Lieutenant [illegible] J. H. [illegible] from March 1 1946

[illegible] Acting Surgeon Lieutenant-Commander [illegible] from May [illegible] 1946

RETIREMENTS

[illegible] W. [illegible] 1946

[illegible] H. H. [illegible]

[illegible] W. H. [illegible]

[illegible]

[illegible] R. H. [illegible] April 1 1946

[illegible] April 1 1946

[illegible] Lindsay [illegible] April [illegible]

Surgeon [illegible] Captain D. [illegible] May 1 1946

Surgeon [illegible] Captain M. Critchley released May 1 1946

Surgeon [illegible] Captain J. L. Sinclair released May 1 1946

Surgeon [illegible] Captain [illegible] released May 1 1946

[illegible] R. Hill released May 24 1946 to full [illegible]

[illegible] W. [illegible] released June 1 1946

[illegible] W. [illegible] released June 1 1946

[illegible] released May 27 1946 [illegible]

[illegible]

[illegible] released June 15 1946

[illegible] D. M. [illegible] Armed [illegible] 1944 [illegible] December 31 1943

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

RETIREMENTS

Acting Senior Sister Mrs. A. M. Aikenhead released January 4 1946
Acting Senior Sister Miss C. M. Leedham released February 16 1946
Acting Senior Sister Miss L. Miller released February 13 1946
Acting Senior Sister Miss [illegible] L. A. Paterson released February 13 1946
Acting Senior Sister Miss K. M. Buckley released February 13 1946
Acting Senior Sister Miss I. M. Basend released abroad February 21 1946
Acting Senior Sister Miss B. B. Tyndale Biscoe released February [illegible] 1946
Acting Senior Sister Miss M. R. Mitchell released February 20 1946
Acting Senior Sister Miss B. J. B. Matheson appointment terminated (medically unfit) [illegible]
Acting Senior Sister Miss K. M. Sabin released March 22 1946
Acting Senior Sister Miss H. M. Paterson released March 14 1946
Acting Senior Sister Miss K. J. Brookes released March 26 1946
Acting Matron Miss E. L. Christian released May 1 1946
Acting Matron (Retired) Miss R. E. Child released March 28 1946 reverts to retired list
Acting Senior Sister Miss A. E. Howland released March 30 1946
Acting Senior Sister Miss E. M. Devereux released March 5 1946
Acting Senior Sister Miss I. Pollock released May 1 1946
Acting Senior Sister Miss N. W. Booth released April 26 1946
Acting Senior Sister Miss E. H. Brinkman released March 27 1946
Acting Senior Sister Miss M. J. Farrer released April 29 1946
Acting Matron Miss R. M. Blakie released April 17 1946

Notice.

The Editors invite Medical Officers to send in Original Papers on professional subjects, travel, personal experiences &c. Items of news and matters of interest to the Naval Medical Service will be welcomed from ships and establishments on home and foreign stations.

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VOLUME XXXII [illegible], 1946 No. 1

Journal
of the
Royal Naval Medical Service.

Articles.

PSYCHOPATHIC PERSONALITY

BY [illegible] WHITEBROOK

[illegible] Hospital [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

PSYCHOPATHIC PERSONALITY

[illegible]

[illegible]

[illegible]

[illegible] results from a mental state [illegible] behaviour symptoms [illegible] in his mind [illegible] question whether [illegible] these [illegible] rather than [illegible] give [illegible] the [illegible]

[illegible] and the [illegible] of [illegible] term [illegible] equally [illegible] human [illegible] with [illegible] psychopathic [illegible] Whether [illegible] of psychopathic [illegible] this category will [illegible] relative [illegible] still [illegible] difficulty [illegible] formulating [illegible]

[illegible] persons [illegible] psychopathic personality (the [illegible] personality [illegible] used synonymously in this [illegible] the psychiatrist [illegible] the psychopathic in general [illegible] which amount almost to [illegible] the psychiatrist [illegible] behaviour symptoms have taken a particularly [illegible] sections have led them into conflict with the law and [illegible] as a means of escape to seek the help of [illegible] a certain type of delinquent [illegible] of psychopathic [illegible] psychopaths are delinquents and only a few of these [illegible] of their delinquency

[illegible] account than other behaviour symptoms [illegible] ambition is [illegible] that the person [illegible] potentiality [illegible] delinquency although [illegible] perhaps

[illegible] psychopathic personalities in child guidance [illegible] is still [illegible] the medical officer of the Services [illegible] has been referred to him when their behaviour [illegible] is [illegible] abnormal to cause complaint

[illegible] the psychopath consult the doctor [illegible] because of the intrinsic nature of [illegible] In those cases where this [illegible] personality with the medical man would [illegible] as efficient a number of his abnormal [illegible] the [illegible] met

[illegible] behaviour [illegible] to [illegible] lost assets [illegible]

If the [illegible] the individual [illegible] his little difficulty [illegible] the essence [illegible] is still in [illegible] the amount [illegible] healthy in their [illegible] what [illegible]

It is [illegible] the personality [illegible] the psychopath will be [illegible] personality is not [illegible] with the psychosis and [illegible] is [illegible]

[illegible] the mental reservoir [illegible] thus not [illegible] the [illegible] of [illegible] is going, it is [illegible] exceptional claim is made [illegible] they [illegible] the class

It is [illegible] the [illegible] the psychopathic type without [illegible] of such nature or degree that [illegible] would be contained in [illegible] the exceptional [illegible] psychopathic personality depend in enormous [illegible] which is the state of the mind which gives rise to the [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] unusual habit [illegible] [illegible] [illegible]

[illegible] social conditioning [illegible] of the

mind [illegible] with an [illegible] labor life in the [illegible] of the stability of mak[illegible] of life is [illegible]

[illegible] mental defect [illegible] psychopathic [illegible] that the failure of this type [illegible] only the probabilities of [illegible] by the characteristics [illegible] which induces [illegible] process [illegible] balanced malarity and [illegible] leads to psychopathic [illegible] that would be [illegible] only in so far as the [illegible] that appreciation of life [illegible]

The qualities [illegible] a very considerable [illegible]

Unreliable	[illegible] (occupationally)
Egotistical	[illegible]
Impulsive	[illegible]
Suspicious	[illegible]

Any or all of these [illegible] the psychopath is [illegible] they represent [illegible] qualities to open [illegible]

In tracing out the [illegible] mental function must be [illegible] development of the socializing [illegible] mechanisms produced by the [illegible] the main trains of immaturity [illegible] development of compensation [illegible] by a mind that in spite [illegible] mental defect.

Motivations of immaturity. [illegible] the needs for mastery [illegible] in this respect that the psychopath [illegible] persist in immaturity [illegible] the psychopathic personality. For example the [illegible] the psychopath in relation to [illegible] but although the psychopath [illegible] grounds for such [illegible] the psychopath is both consistent [illegible] egocentric desire [illegible] extrinsic objective.

The motivations [illegible] arise can be [illegible] to satisfy self first last and [illegible]

The psychopath [illegible] because he has [illegible] enough to subjugate the [illegible] external to himself is caught [illegible]

Such motivations and [illegible] incompatible with social adjustment [illegible] mental defect—the psychopath [illegible] himself by a form of thought process which [illegible] otherwise. To the opposition that is to the [illegible] function of the mind which normally with maturation [illegible] established that at first there is more conscious [illegible] mind but with time the number which arise [illegible] mental absorption is in great part an ideal and this by passing [illegible] function of the mind in consequence of its neglect fails [illegible]

[illegible] by the psychoanalytical [illegible]

[illegible]

[illegible]

[illegible]

[illegible] that [illegible] psychopathic [illegible] not [illegible] from [illegible] life [illegible]

The [illegible] of the [illegible] avoidance of the [illegible] of the [illegible] developed from the [illegible]

[illegible] of abstract and [illegible] and logical [illegible] made [illegible] of the [illegible] As has been so frequently the psychopath [illegible]

The Motive of Defence. — Motivations, thought processes and [illegible] compensation and defence are still more complex. [illegible] sham of desire to be popular to be esteemed [illegible] towards what he is not—a desirable normal. Indeed [illegible] in his aspiration to heights which were beyond reach [illegible]

His [illegible] then forsaken from attempts to reach the heights by means which [illegible] certain substitution manœuvres irrespective of their ethical [illegible] his self esteem by concealing from his fellows that he has [illegible] he could inspire their respect.

Any [illegible] his inadequacy or failure is a challenge to his compass [illegible] and inversely any circumstance or person that enables him [illegible] to his gifts either directly or indirectly is eagerly [illegible]

The [illegible] this source are innumerable. This source accounts largely [illegible] many of the [illegible] and undesirable characteristics of the psychopath [illegible] from the whole truth or near lying. His mimicry of behaviour [illegible] excesses. His hue of brightness even by means of [illegible] and tries to reach the goals which are flattering [illegible] himself to the person of higher standards of conduct.

Many of his [illegible] heeded towards raising himself in the esteem of others or to bring [illegible] such as this acts in which he attempts to increase his relative status by the [illegible] of others can be attributed to motivations arising from the [illegible] this personality type to compensate substitute and [illegible]

Behaviour Symptoms. — In [illegible] the condition it is only too easy to allow the outward manifestations [illegible] psychopathic to assume an importance beyond their merit. They [illegible] causative. It feel cannot be directly appreciated by any means at [illegible] the mental processes that arise from this defect be directly [illegible] assumes an importance and an essentiality as being the only [illegible] to diagnosis. But it is only the evidence of the mental [illegible] importance beyond that.

The understanding of the [illegible] of behaviour symptoms with accentuation of importance [illegible] they become more obvious but an appreciation of the mental motivation [illegible] processes which lead to this or that or the other abnormal [illegible] offensive but so

[illegible] the st[illegible] it is essential to [illegible] is a sufficient [illegible] insane combination.

Behavior [illegible] may assume [illegible] psychopath [illegible] and normality [illegible] components.

Neither [illegible] personality. Like [illegible] abnormal situations. [illegible] symptoms over a such [illegible] combination of [illegible] which is the offspring [illegible] of the [illegible]

Gillespie illustrated [illegible] that may derive from many [illegible] one source.

While the influence [illegible] of the psychopath of the psychopathic personality [illegible] assess its influence on [illegible] ambition [illegible] great it may indeed be [illegible] an individual [illegible] potentiality for abnormal [illegible] develops [illegible] years with [illegible] recognition. A psychopathic [illegible] social maladjustment [illegible] the condition away, [illegible] or by finding himself in [illegible] being revealed. Ordinarily [illegible] advancing age which [illegible]

It is not proposed [illegible] personality because it [illegible] emphasis on the more [illegible]

It has been at times [illegible] more dramatic and [illegible] psychopathic personality [illegible]

Recognition and Diagnosis. [illegible] be of a picture convincing [illegible] employed but failing [illegible] as a work of art.

This difficulty was recently [illegible] psychopathic personality could [illegible] This is because a description [illegible] set of circumstances would [illegible] against the ever changing scene [illegible] mask so that the characters [illegible] another scene the psychopath [illegible]

First Observer. What is that [illegible] so obviously anxious to make [illegible] noticed that he has a kind [illegible]

Second Observer. That is Mr. X, the psychopath.

The part played by Mr. X [illegible] psychopathic personality will [illegible] as when he is seen at two [illegible] his force.

The facility with which [illegible] be most defeating, to the brain [illegible]

> All the outward [illegible] quests as detected [illegible] found [illegible] then normal aspect [illegible] but [illegible] very slowly [illegible] these intact rational [illegible] and then [illegible]

[illegible] what might be [illegible] [illegible] [illegible]

[illegible] relationship [illegible] will [illegible] to [illegible] wrong [illegible] opportu[illegible] the relat[illegible] report [illegible] with [illegible] the general [illegible] defence that [illegible] may be [illegible] bolster his [illegible] that he [illegible] although his [illegible] uninhabited [illegible] disliked by [illegible]

It has be[illegible] failure of the [illegible] relationship [illegible] inability to [illegible]

The [illegible] what [illegible] one finds [illegible] of difficulties [illegible] domestic) [illegible] which are [illegible] by [illegible]

Emotionally [illegible] confused [illegible] behaviour [illegible]

The [illegible] asocial behaviour [illegible] level as has [illegible] necessity a low [illegible] may be [illegible] impression.

The personality type [illegible] a psychiatric [illegible] episodic [illegible] to the hysteric [illegible] controlling the [illegible] appreciate the [illegible] feature but [illegible] persistently [illegible] component [illegible]

In this [illegible] opportunistic [illegible] this type of [illegible] type of industrial [illegible] coles his behaviour [illegible] personality. The [illegible] of it and the [illegible] opportunistic [illegible] is self-absorbed [illegible] his egocentric [illegible] objectively considered [illegible] The unscrupulous

[illegible] It is would not stand judgment [illegible] [illegible] [illegible]

early it should be possible to [illegible] such [illegible] under personal and social relationships which [illegible] behaviour symptoms.

Distinctly more important [illegible] where this most disruptively [illegible] characteristic of this type [illegible] themselves. The psychopath [illegible] position in which he has [illegible]

[illegible]

In dealings with psychopaths [illegible] treatment or attempts to [illegible] actions it is essential to bear in mind [illegible] reasoning that it would appear [illegible] following points will save [illegible]

(1) No treatment [illegible] producing any actual change in the [illegible] to mend ways, plausible [illegible] and should not [illegible] lived.

(2) It is useless [illegible] or to expect him to appreciate [illegible] with people of normal outlook. [illegible] with values that are signifi[illegible] The term "semantic dement[illegible] of the condition.

(3) The psychopath [illegible] any sort of power is in many [illegible] a gun. The simile may seem [illegible] idea of the mischievous and [illegible] will result in gain his ends and [illegible] he will adopt to achieve some [illegible] which a normal person would [illegible] before this should now be [illegible] he is being attacked in possibly [illegible] to his situation. Likewise, the [illegible] normal and appropriate response [illegible] reason of his fundamental [illegible] attack and to snipe at his self [illegible] through life—a hunting at [illegible]

[1] Curran, D. and Mallison, [illegible]
[2] Hutchison, D. K. (1939) [illegible]
3. *Idem* (1939) [illegible]
4. Noyes, A. P. and Hayes, [illegible]
5. Notes, A. P. (1939) [illegible]
[6] Cleckley, H. (1941) [illegible]
[7] *Idem* (1941) [illegible]
[8] Curran, D. and Mallison, [illegible] 40 [illegible]
9. Stafeb, [illegible] (1938) [illegible]
10. Str[illegible] [illegible] Philadelphia
11. [illegible] (1946) [illegible]
[12] [illegible] (1944) [illegible] 99 [illegible]
[13] Cleckley, H. (1941) [illegible]
[14] Cathell, J. M. (1944) [illegible] 99 [illegible]
[15] Lindquist, [illegible] A. (1938) Social Psychology [illegible]

[illegible]

[illegible]

[illegible] separate clinical [illegible] responsible [illegible] enumerate the [illegible] treatment. No [illegible] somewhat [illegible] in every [illegible]

[illegible] specially [illegible] will require [illegible] that the [illegible] reliable [illegible] upon [illegible] with [illegible] electro [illegible] of the [illegible]

[illegible]

[illegible] will [illegible] necessary if [illegible] place in [illegible] and [illegible] of [illegible] applications [illegible] [illegible] [illegible]

[illegible] the etiology [illegible] been a matter of controversy [illegible] and truth is now [illegible] cerebral dysrhythmia. These [illegible] may be of [illegible] utilized convulsion or they [illegible] convulsion or they may [illegible] 1934 [illegible] tests of subthreshold epilepsy [illegible] tests with an [illegible] picked up only by [illegible]

[illegible]

It is not [illegible] the condition which [illegible] is [illegible] recurrence at intermittent [illegible] epilepsy in a [illegible] officer [illegible]

The nature degree duration [illegible] not only in different individuals [illegible] important fact to bear in mind [illegible] that other manifestations [illegible]

In the past enormous [illegible] a negative history just [illegible] whereas in actual practice [illegible] history. The whole [illegible] and Gibbs who analysed the [illegible] 185 [illegible] records were found in 60 [illegible] but of these only 24 [illegible] have some degree of [illegible] epilepsy. [illegible] chances of epilepsy [illegible] some 35 per cent of the [illegible] this that one requires [illegible] epilepsy but a definite insult [illegible] only when [illegible] prospective partner.

A fit occurring for the first time in an adult is [illegible] forbode serious [illegible] its ætiology.

Epilepsy not infrequently [illegible] the first time in [illegible] cases one meets fall within this group. It is [illegible] cause of repeat [illegible] patient's life [illegible] episodes recurring [illegible] episodes may show [illegible] screaming, with [illegible] course infantile [illegible] fits attacks must [illegible] at regular or irregular [illegible]

When epilepsy [illegible] 30 [illegible] needed. It is [illegible] is present. It must be [illegible] present symptoms [illegible]

The importance [illegible]

Case 1. Aide Seaman [illegible]

The patient [illegible] fact was fairly [illegible] [illegible] appeared [illegible]

April 12 [illegible] no further trouble until [illegible]

October 1940 [illegible] passed [illegible]

March 1943 [illegible] three further attacks [illegible] and necessitated [illegible]

[illegible] he just fell to the ground and came to [illegible] the inside of his hip but only [illegible] There was no sweating, after an attack [illegible]

[illegible]

[illegible] that his maternal grandfather had a similar [illegible]

[illegible] Water pressure test [illegible] phaloplethysmography [illegible] overbubbling.

[illegible] all investigations including the [illegible] and [illegible] forced to rely entirely on the history. Nevertheless [illegible] a diagnosis of epilepsy fairly [illegible] There is the [illegible] grandfather and the personal history of something [illegible] in later life, to brief periods of unconsciousness, [illegible]

[illegible]

[illegible] I think he had a [illegible] fitness [illegible] I think, but he [illegible] the work [illegible] He was in a [illegible] that he had [illegible]

[illegible] and [illegible] he [illegible] last [illegible] and [illegible] he [illegible] immediately. He came to some [illegible] later [illegible]

[illegible] of the right face, lasting a few [illegible] and tired [illegible] when [illegible] he felt and by using [illegible] he [illegible] sphincter relaxation [illegible] visual fields

X-ray [illegible] normal

Electrocardiogram [illegible] normal, though somewhat unstable. There was [illegible]

The [illegible] The patient was over 30 when [illegible] of fits. Others which suggested that the left [illegible] All investigations proved negative. However the [illegible] Further examination of the [illegible] further examination of the [illegible]

If [illegible] neurosis always [illegible] of patients especially the older [illegible] abroad. It appears to be commoner in the Army than in the Navy, but [illegible] further [illegible] during the next few years in view of the [illegible]

Chronic [illegible] may present [illegible] and this possibility should be borne in mind [illegible] Lastly sepsis is [illegible]

[illegible] aged 41

[illegible] The patient [illegible] the right chest and later a right pleural [illegible] repeatedly been [illegible] and later another pocket [illegible]

[illegible] Heavily fell to the ground and had a [illegible] grandfather [illegible] spasms lasting [illegible] and doubtful spasticity [illegible]

[illegible] later responsive became extinct [illegible] patient died the next [illegible] considerable [illegible] the chest wall on top healed

[illegible] such is the point [illegible] recall from his original illness at the [illegible] of fits remained in abeyance

NOCT[illegible] EPILEPSY

Epilepsy may be [illegible] occasional [illegible] be fairly easily [illegible]

Case 77 [illegible]

September 1944 [illegible] sick bay [illegible] ten minutes [illegible] attack he [illegible]

Three weeks [illegible]

17th November [illegible] was entering [illegible] tongue biting [illegible]

Clinical exam[illegible] tolerance [illegible] quite stable [illegible]

There was no [illegible]

In this case [illegible] all investigations [illegible] is no doubt that he [illegible] character [illegible]

TRAUMATIC EPILEPSY

This is a fairly [illegible] is of some importance [illegible] being highest in [illegible] probably about 18 per [illegible] injuries without [illegible] not necessarily [illegible]

The average [illegible] or more actually [illegible] The site of injury [illegible] giving only a slightly [illegible]

Traumatic epilepsy [illegible] all types are [illegible] epileptics [illegible] Jacksonian or [illegible] The commonest [illegible] [illegible] [illegible] [illegible]

It is often [illegible] what [illegible] local injury plays [illegible]

Case [illegible]

Aged 17 [illegible] of the accident [illegible] He made [illegible] in 1941

June 1942 [illegible] hospital [illegible]

February 1943 [illegible]

Since then [illegible]

[illegible]

Electro[illegible] metal [illegible]

[illegible]

This case [illegible] seen [illegible] obvious [illegible]

[illegible]

[illegible]

[illegible]

blankness [illegible] the motor and postural [illegible] fall affected the [illegible] falling, or sitting, in the [illegible] postural [illegible] the patient falls [illegible] usually accompanies an attack [illegible] to this may be [illegible] with psychomotor disturbance [illegible] the [illegible]

The [illegible] the electroencephalogram and the [illegible] points out that there are [illegible] and the other is small *grand* [illegible] quite different though the two [illegible] true epilepsy later and may be [illegible] probably a constitutional [illegible] respond to [illegible] the data [illegible] it is difficult or [illegible]

Only [illegible] of the divisions of [illegible] we shall [illegible] in the [illegible]

[illegible]

Generally [illegible] the [illegible] may be [illegible] when the attacks [illegible] patient, in fact [illegible] having very infrequent [illegible] such as Case [illegible] fainting, may not be [illegible]

An [illegible] to have an [illegible]

Case VI. [illegible]

19th May [illegible]

[illegible] not [illegible] ship [illegible]

[illegible] convulsant [illegible] hydant [illegible] (5) prominent [illegible] the depressing [illegible]

[illegible]

[illegible]

mon [illegible] disease and [illegible] pathological state [illegible] cerebral arteri[illegible] lesions especially [illegible] Gull [illegible] views the [illegible] thing that [illegible] palpitating [illegible] the result [illegible] in to state [illegible] is [illegible] in the r[illegible] that [illegible] not as still d[illegible]

Each [illegible] the same d[illegible] similarly [illegible] the [illegible] instances [illegible] resembles heavy [illegible] a person [illegible] awaken [illegible] in the brain [illegible] changes [illegible]

Narcolepsy [illegible] may be associated [illegible] other [illegible]

Cataplexy [illegible] and hesitancy and [illegible] a sound. They [illegible] generally [illegible] when the patient [illegible] dormital period [illegible] go away still [illegible] the paralysis [illegible] periods [illegible] invariably [illegible] by giving potassium [illegible] and [illegible] by giving glucose and the duration [illegible] the attack [illegible] lasting some hours or even [illegible] Sufferers from [illegible] the attacks often elaborate and [illegible] and [illegible]

The following [illegible] which may arise [illegible]

Case VII [illegible]

The patient [illegible] sleep in the [illegible] local but still [illegible] from attacks of [illegible] at any time with [illegible]

Examination [illegible] deliberate—certainly [illegible] marked and [illegible]

X ray of the skull [illegible] apparent on the [illegible] tolerance test [illegible] showed no abnormal [illegible] as hypervagal [illegible]

Several attacks [illegible]

20th July 1945 [illegible] sleep allowing [illegible] Other attacks [illegible]

The patient was [illegible] from the Service.

This was purely [illegible] ing, will to benzedrine. He was fully [illegible] short history of the [illegible]

Case VIII [illegible]

The patient [illegible] shock [illegible] cut head.

[illegible] PROFESSIONAL SYNDROME

[illegible] momentary giddiness [illegible] from concussion [illegible] not be [illegible]

[illegible] of instrument [illegible] the right [illegible]

[illegible]

The [illegible] may [illegible] critical [illegible] question.

Another [illegible] is that [illegible] senses [illegible] dazed [illegible] dependent [illegible] the rule [illegible] syndrome [illegible]

It is, of course, [illegible] from the strict [illegible] of amnesia and [illegible] by the patient [illegible]

The following [illegible]

Case XIV. [illegible]

Admitted [illegible]

At the [illegible] [illegible] head with [illegible]

During the [illegible] of [illegible]

Nothing [illegible] as called [illegible]

Later [illegible]

[illegible]

[illegible]

[illegible]

Remained [illegible]

What [illegible]

What [illegible]

A companion [illegible] by himself and [illegible] plane, fell [illegible]

Since then [illegible] instability [illegible] he fainted [illegible]

He [illegible] but never [illegible] [illegible]

Clinical examination [illegible]

This was [illegible] blackouts [illegible] posture and [illegible] it is just possible [illegible] syndrome shown [illegible] [illegible] and [illegible] unwillingly.

[illegible] CONCLUSIONS

Although [illegible] patient departments [illegible] [illegible] is in [illegible]

the pa[illegible] compan[illegible] and s[illegible] falls [illegible] from th[illegible] and [illegible] mild [illegible] mystag[illegible] a[illegible] lacks [illegible] taken [illegible] for [illegible] [illegible]

[illegible]

In the [illegible] severe [illegible] morphin[illegible] month [illegible]

Between [illegible] phenobarbit[illegible]

If all [illegible] completed.

ANXIETY STATES AND HYSTERIA

A very [illegible] varying from the mild [illegible] syndrome [illegible] fits with contortions [illegible] in the more severe [illegible] by the almost [illegible] reasonably [illegible] hysterics [illegible] varying from the [illegible] true nature [illegible] more or less frank malingering.

In the anxiety state [illegible] frequently [illegible] of expressing a deep

rooted fear of [illegible] especially if he [illegible]
occasions [illegible] and the frank hysteria [illegible]
and its purpose [illegible] that the history is [illegible]
will rarely [illegible] and is [illegible]
motion [illegible] more than [illegible]

The diagnosis [illegible] the patient [illegible]
patient is seen [illegible]
can be luckily [illegible] by the [illegible]
suggestive [illegible]
When such [illegible] the
majority of [illegible] will [illegible] ity
in establishing [illegible] ms
are of a purely [illegible]
and then [illegible]
simple suggestion [illegible]

The following [illegible]
most of the [illegible]
states

Case XLIII. [illegible]

This patient [illegible]
unconscious [illegible]
would not [illegible]
and shuddering [illegible]
by his heels [illegible]
pulse and [illegible]
some twenty [illegible]
and clinically [illegible]
Next morning [illegible]

This is [illegible]
might be applied [illegible]
in this case [illegible]
The diagnosis [illegible]
accurate [illegible]

By way of [illegible]

Case XLV. [illegible]

February, 1941. [illegible]
man appeared [illegible]
taught [illegible]
kept busily for [illegible]
chu[illegible]

He had [illegible]
much alcohol [illegible]
all his life. He [illegible]
abandoned [illegible]

During [illegible]
salon [illegible]
insomnia [illegible]
variously [illegible]

He [illegible]
December, 1945 [illegible]
length [illegible]
return again [illegible]

About January [illegible]
Clinical examination [illegible]
His earlier [illegible]

This patient [illegible]
occasions for his [illegible]
that signs of [illegible]
to have been [illegible]
it was first noticed [illegible]
whenever he [illegible]
out when he had [illegible]
to him in detail [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] hanges—[illegible] ess and [illegible] wer [illegible]

[illegible] ther [illegible] use [illegible] ew [illegible]

[illegible] in the main measuring [illegible]
The [illegible] as and the area of [illegible]
electr[illegible] [illegible] tant and blo[illegible]
was [illegible] wed to the [illegible]
Acc[illegible]
The [illegible]

The [illegible] when the [illegible] intra al[illegible] [illegible] full of [illegible]

He also [illegible] all [illegible] alarming, [illegible] dilatation [illegible] anoxæmia [illegible] filtration [illegible]

Treatment [illegible] and mechanical [illegible] kind by stimulants.

As will be [illegible] of a syncopal attack [illegible] at other times more [illegible] fairly rapidly. During [illegible] reflexes—some degree [illegible] profound or prolonged [illegible] and the pulse—which [illegible] variable feeble and [illegible] patient may vomit [illegible] symptoms usually subside [illegible] it may be difficult and [illegible]

[illegible]

This condition is [illegible] mentioned by the [illegible] planning of fainting, that is [illegible] spite of the fact that the [illegible]

The carotid sinus [illegible] a rise of pressure [illegible] a fall of pressure [illegible] of Hering, which is [illegible] neighbourhood of the [illegible] lined glands or the [illegible] Intense doubt [illegible] in set up by [illegible] pressure on the sinus [illegible] of interruption of [illegible] [illegible] the [illegible]

The [illegible] the [illegible] highly investigated [illegible]

[illegible]

This is a most [illegible] which [illegible] with times [illegible] attack and [illegible]

The [illegible] which really [illegible] be [illegible] of the [illegible] The symptoms [illegible] and a [illegible]

[illegible]

[illegible]

[illegible]

one individual and another [illegible] with age a person [illegible] his blood pressure [illegible] of 25 [illegible] relatively [illegible] throughout life [illegible] tends to increase either slowly or [illegible] later life [illegible] figures [illegible] to be [illegible] normal life for [illegible]

[illegible] widespread tendency to [illegible] for many ills which befall the body [illegible] down and fully relaxed for [illegible]

[illegible] hypertension both of which [illegible] when the calibre of the [illegible] of the brain. The symptoms [illegible] headache and [illegible] writing, and brief phases of [illegible] The simulation [illegible]

[illegible]

[illegible]

[illegible]

[illegible] complete examination [illegible]

[illegible]

[illegible]

[

[illegible]

[illegible]

[illegible]

[illegible] escape of the S[illegible] [illegible] if she were quite [illegible] both [illegible]

S[illegible] [illegible] has been, p[illegible] cause [illegible] 60 bit [illegible] when [illegible] and the [illegible] finding.

It w[illegible] [illegible] fitting, [illegible] exhibit [illegible] not seen [illegible] flying.

Ca[illegible]
Th[illegible] [illegible] a night [illegible]
th[illegible]
to 46 Bi[illegible]
to 105—[illegible]
gram [illegible]
the elec[illegible]
rhythm [illegible]

Dum[illegible]
histori[illegible]
S[illegible]
a month [illegible]
frequent [illegible]
occurre[illegible]
and then [illegible]
in manne[illegible]
Ch[illegible]
tolerance [illegible]
N[illegible]
Ith[illegible]

It would [illegible] from hyp[illegible] A.V. [illegible] sufficiently [illegible] though [illegible]

He may [illegible] short serv[illegible]

[illegible]

These [illegible] where the [illegible] naturally [illegible] legions of [illegible]

Lid[illegible] [illegible] very rarely [illegible] limitation [illegible] and [illegible] and [illegible] missed [illegible]

Hard[illegible] [illegible] sits for [illegible] division or [illegible] depends principally [illegible] there is [illegible] of over twelve [illegible] an usually [illegible]

The [illegible] for [illegible] but from the [illegible] matter is whether [illegible]

syndr[illegible] the these attacks of syn[illegible] [illegible] [illegible] [

This is an [illegible] to that routine and fairly careful examination of the patient's cardiovascular [illegible] will fail to reveal any abnormality. On the evidence before one it is presumed [illegible] under septal defect was present, interfering in some degree with some of the [illegible] the circuit ventricular bundle and the fairly strenuous exercise had sufficed to provoke [illegible] form of abnormal rhythm, temporary in character but sufficient to cause syncope.

HYPOGLYCAEMIA

These cases are not uncommon and unless the condition is borne in mind they are relatively easily missed. The extreme sensitivity of the brain to hypoglycaemia is due to the fact that it is the only organ in the body unable to derive energy from carbohydrate alone, other means supplying their own fuel, shown by the excellent work of Bell, Carslaw and Ellis.

Hypoglycaemia should be diagnosed only when symptoms are associated with a low blood sugar, when they can be explained by stimulation, exercise, or insulin and relieved by sugar. When the blood sugar falls rapidly or reaches an abnormally low level a variety of cardiac and neurological symptoms may be produced and effort syndrome can be very closely simulated and cardiovascular symptoms can readily occur, but subjects with cerebral dysrhythmia are especially susceptible. The literature contains numerous references to hypoglycaemia simulating epilepsy, *petit mal* &c., and the whole question has been reviewed recently by Rotelbaum [11]. Psychotic interludes with complete subsequent amnesia of the event and actual criminal acts are by no means uncommon. Lawton [12] reminds a case, when a diabetic invited some friends to a meal and began by pressing them to help themselves more liberally to pepper. He then arose excitedly and in a loud voice, he hurled insulting epithets at his wife who, recognizing the condition, besought her to take more sugar. He replied that of course she wanted him to take sugar—a thing the doctor had forbidden him—so that she might get rid of him and marry someone else. The patient was finally forced to take sugar, when symptoms rapidly passed off and he had no subsequent record of what had occurred.

Hill and Sargant [13] report the case of a young man accused of the murder of his mother. Though he had not suffered from epilepsy or acquired mental disease, it was found that whenever his blood sugar was below 100 mg. per cent the electroencephalogram was abnormal and that hyperventilation would then induce an abnormal electrical discharge in the cortex which was associated with some degree of impairment of judgment and clouding of consciousness. The authors concluded from the history of his dark picture the murder and glucose tolerance test that it was almost certain that his blood sugar was below 100 mg. per cent at the time when he made his murderous attack. Hyperventilation occurred owing to the emotion caused by the quarrel, particularly by his being pushed along a corridor. The prisoner was found guilty but insane.

Case XL.—Seaman, aged 24.

The patient stated that since boyhood he had been prone to a state of collapse on a number of occasions and had been in hospital.

1934. When aged ten he had only recently left Dr. Barnardo's where the attacks commenced. He was very thoroughly investigated in a Metropolitan hospital and in 1941 when he was first in the Navy he took something, but had no longer than three hourly intervals. He had a dreadful time and swelled up.

1942. When he joined the Service and after this he had other attacks took place which caused his entry into hospital.

Attacks occurred only when he was hungry and usually after he had been taking exercise. They never occurred in under two hours after a meal and still more in three hours. The need was fairly good—a feeling of dizziness and faintness followed by crazy sensation, and unless sugar was taken this would be followed by collapse.

Investigations in hospital subsequently showed [illegible] in this case [illegible] hypoglycaemia with a fasting blood sugar of 70 mg. and after glucose to 142 mg. but falling away to 95 in two hours and 70 in three hours.

The condition was of long standing and there was no evidence of suspect tumour formation. The patient was invalided.

Case XLI.—N. A., aged 20.

This patient was almost exactly similar to case XL., except that the attacks began rather later in life (about the age of 15) and were accompanied by cramps in the legs.

[illegible]

[illegible]

[illegible] CONCLUSIONS

[illegible]

[illegible]

[illegible]

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[illegible] **1** 5 6

ORGANIZATION OF A CASUALTY RECEIVING STATION
(*H.M.H. [illegible]*)

BY SURGEON LIEUTENANT-COMMANDER J. A. SMITH [illegible]

O[illegible] a Casualty Receiving [illegible] are known and some uncertain. The knowledge [illegible] equipment [illegible] fact as an [illegible] injury and [illegible] possibility of [illegible] H.M.H. Ph[illegible] a group of [illegible] than [illegible] for an organization of this type. It is [illegible] which might [illegible] is [illegible]

In 1939 at the outbreak of war the hospital [illegible] Naval [illegible] with wards [illegible] total [illegible] 900 to 900 beds. [illegible] result in such a [illegible] Naval [illegible] approach [illegible] on the Thames [illegible] Naval D[illegible] and Plymouth [illegible] did however [illegible] action and [illegible] of the population [illegible] tion required only [illegible] accidents of dockyards [illegible]

A change in our [illegible] 1940. Dunkirk [illegible] Sound became full of ships returning from [illegible] Western coasts of France [illegible] South West [illegible] at any time than [illegible] with and the activities [illegible]

It was obvious that [illegible] could be anticipated [illegible]

(1) *Reception [illegible] handled.* Consultation [illegible] practice this [illegible] the last possible [illegible] consideration.

(2) *Reception [illegible]* Naval [illegible] admitted from [illegible] in the event of this [illegible] the neighbourhood of the hospital [illegible] Plymouth with its [illegible] in which transport [illegible] central point which [illegible] procedure justifiably with the [illegible]

(3) *Reception [illegible]* possibility had [illegible] would have functioned [illegible] district.

As a result of [illegible] later about eighty [illegible] They had all recovered [illegible] complications. It [illegible] ample time to clear wards [illegible] rest food and good [illegible] Much of the surgery [illegible] in Europe but between [illegible] 1940).

A destroyer [illegible] casualties were admitted [illegible]

[illegible]

[illegible] examples [illegible] problems [illegible] is [illegible]

[illegible]

[illegible] until [illegible] 1940 [illegible]

[illegible] treatment of [illegible]

[illegible] patients not could [illegible]

[illegible] casualties [illegible] through special [illegible] because of [illegible]

[illegible] of cases [illegible] an attempt [illegible]

[illegible] at the [illegible]

[illegible] with [illegible] experience of the Spanish [illegible] War [illegible] 1939 [illegible] 1940) But [illegible] the problems practically

[illegible] experiences [illegible] taking note of [illegible] must [illegible] a Reception Unit evolved which [illegible]

[illegible] by the more recent developments [illegible] 1914 1918 [illegible] experiences [illegible] the more relevant experiences in the Spanish War [illegible] general conflagration of 1939 [illegible] it is apparent that large numbers [illegible] hours and [illegible] the process of [illegible] large numbers [illegible] hospitals [illegible] The [illegible] serum as well as the establishment of [illegible] with regard to the organization for resuscitation [illegible] organization must allow [illegible] within this period

[illegible] suggest [illegible] of wounds [illegible] this may be stretched to [illegible] added [illegible] therapy [illegible] therapy) Admittedly [illegible] may be [illegible] in which this danger [illegible] recognised [illegible] the point of view of organization [illegible]

[illegible] light [illegible] high explosive prepared [illegible] almost invariably multiple and almost always carrying

a high [illegible] the dissid plist [illegible] Frueh (1939*a* and [illegible] Wm. H. Orr and [illegible]

[illegible] ISTRAY REFUGEE [illegible]

A.—R[illegible] the possibl of lon[illegible] three thirty [illegible] glass [illegible] Owing [illegible] restricted [illegible] was impo[illegible] transport [illegible] corridors [illegible] (Actually [illegible] this glass [illegible] grounds [illegible] wards [illegible] insulins. It was [illegible] considered [illegible] until [illegible] cases [illegible] regarded as best fitted [illegible] protected against blast although [illegible] which [illegible] have been [illegible] partially [illegible] black out shutters [illegible] the [illegible] by blast. Eventually the windows [illegible] wards were kept [illegible] these wards [illegible] were furnished [illegible] wards were [illegible] incapacitated [illegible] but would [illegible] less destroyed [illegible] is a one-storied [illegible] compelled [illegible] group of the [illegible]

Stretcher [illegible] wards [illegible] this duty. Patients [illegible] their cases to the [illegible] other outside staff [illegible] ward became [illegible]

In the [illegible] cases. The [illegible] examination and [illegible] round the [illegible] possessions [illegible] for a hundred [illegible] The partial [illegible] chest [illegible] consisting [illegible] in the form of [illegible] examination [illegible]

B.—EXAMINATION [illegible] examining [illegible] order resuscitation [illegible] had to be [illegible] It was essential that [illegible] occur. A pelt [illegible] wards and the [illegible]

Certain [illegible] essential and [illegible] economy had [illegible] spotlights which [illegible] the patients [illegible]

No special [illegible] and diagnostic [illegible] examination [illegible] gauze dressing [illegible] sterilize or [illegible] with thick with dust or soil [illegible] shock. Injections [illegible] tion were dealt with by [illegible] possible [illegible] ailment. The examining,

surgeon [illegible] patients to the medical officers in charge of resus [illegible] X ray [illegible] in the ward.

[FRONT]

NAME [illegible] ALT BED NO WARD
R C L [illegible] S C T
H [illegible]

Hasbrit
Morphia
A T S
A G S
Transfusion

EXAMINATION
[illegible] Fan Truck
R arm
L arm
[illegible] Head
Abdomen
[illegible] R leg
L leg
B R S T I Ball sicks
X S

TREATMENT
A Morphine [illegible] A T S
B Transfusion Blood [illegible] Serum (Refer I Resus Chart)
[illegible] Drugs B I B
D Tetanus Morphine Blood
E X ray Urgent [illegible] Urgent X ray [illegible] to O T (Refer to X ray [illegible])
F Special Instructions

OBSERVATION URGENT OPERATION NON URGENT OPERATION
OPERATION AFTER RESUSCITATION
(If the patient is [illegible] with patient)

BACK

A [illegible] Anæsthetist
Nurse

Operation [illegible] Surgeon

Local chemotherapy A G G Serum

Post-operative treatment Patient to Ward Upper col
Lower

A Morphine
B Chemotherapy
C Half hourly pulse Hourly pulse 4 hourly pulse and Temp
D Fluids By mouth By enema
E Oxygen B I B
F Fluid intake and output Urine [illegible]
G Special instructions

SPECIAL WATCH (M O s Sig)
(N B These notes *must* go [illegible] with patient)

X ray examination this could be time consuming, and even portable machines like [illegible] space [illegible] our two more staff to operate them. There are great assistance to the surgeon in the assessment [illegible] and the planning of treatment. At first radiographers attempted to get perfect pictures with regard [illegible] lung and heart size. This was unnecessary as many wounds were compound and had to be explored [illegible] A quick antero posterior and lateral view giving information regarding the type of missile and [illegible] by enquiry rather than extensive radiography was sufficient. The radiographer [illegible] had [illegible] by which the surgeon in the operating theatre could keep a [illegible] having the right film in the right time. This was not easy because the X ray block was some [illegible] in the wards.

To avoid this hindrance the examining surgeon used with advantage some set form which accompanied the patient from admission onwards. The form illustrated (*see above*) was the result of experience and many similar arrangements were discarded until the present time was evolved. Until a bed ticket was available the form was clipped to a board at the foot of the patient's bed.

C.—RESUSCITATION. The intensive resuscitation required for air raid casualties demanded an extensive organization of staff and equipment which is dealt with in another section

[illegible]

It [illegible] contained [illegible] prolonged [illegible] tended [illegible] believe that the [illegible]

D. On [illegible] usually two [illegible] large central [illegible] cleaner. [illegible] saved time [illegible] patient was [illegible] simple instru[illegible] injuries w[illegible] all cases [illegible]

A [illegible] ratings [illegible] [illegible] heated [illegible] [illegible] risk of [illegible] treatment, [illegible]

Plaster work [illegible] staff train[illegible] much sa[illegible] surgeons [illegible] more part [illegible] employed [illegible]

L. [illegible] to auxiliary [illegible] injury and [illegible] in plaster [illegible] different [illegible] between the [illegible] visits after [illegible] ing of the prob[illegible] on regarding after [illegible]

An organized [illegible] use. Casualty [illegible] was not [illegible] over-labor [illegible] organization [illegible]

The [illegible] June 1941 have shortly [illegible] April 1941 when Plymouth [illegible] during the June, this [illegible]

On the [illegible] will [illegible] [illegible] which did not [illegible]

the yard [illegible] in three hours a new reception ward was in action in another bl[illegible] and a large proportion [illegible] the staff was required [illegible] delay in dealing with the routine casualty work [illegible]

[illegible] it was always possible to work two wards [illegible] the heavy [illegible] maintenance of a steady flow of cases to the [illegible] occasion [illegible] work when rush was still at their height

TABLE I

[illegible]	Total	Total [illegible]	Total [illegible]	Total [illegible]	[illegible]
			Operation	[illegible]	
[illegible]	18 (14 [illegible])	13		4	1
[illegible]	9	9		11	
[illegible]	8	8		3	
[illegible]	1	9		1	
[illegible]	12	8		11	
[illegible]	4 ([illegible])	1		3	1
[illegible]					
[illegible]	8 ([illegible])	1		7	8
[illegible]	[illegible] (9 [illegible])	21		6	5
[illegible]	8	8		8	4
[illegible]	9 (14 [illegible])	8		1	
[illegible]	11 (18 [illegible])	16		5	1
[illegible]	7 ([illegible])	7		11	1
[illegible]	8 ([illegible])	8		3	1
[illegible]	11 [illegible]	2		11	1
[illegible]	71 (29 [illegible])	24		0	11
[illegible]	10 ([illegible])	4		5	4
Total	241	129		30	41

The flexibility of the organization [illegible] further tested in later months and years when [illegible] of cases were admitted from Normandy and from landing operations including [illegible] of D day and upwards

One of the most difficult things [illegible] was the number of cases which might be [illegible] as a result of air raids. Other [illegible] were the proportion of cases which [illegible] require intensive resuscitation [illegible] during operation and the distribution [illegible] injuries in each group [illegible]

[illegible] increase in this in May 1941 [illegible] 18 patients were admitted injured during air [illegible] these cases [illegible] 17 men were resuscitated in the form of intra[illegible] Multiple injuries were [illegible] average. One allowed in each case in the table [illegible] The average interval between injury and [illegible] was five to three hours and none was [illegible] This [illegible] injury. But [illegible] with this relatively small group. Cases three tables [illegible] instantly [illegible] period

[illegible] 241 chosen [illegible] cases was analysed. In this [illegible] different injuries is shown in Table I [illegible] dates that approximately half these [illegible] operative treatment and more than one [illegible] the cases [illegible] It should be noted that transfusion [illegible] 104. [illegible] certain [illegible] cases transfused did not reach the [illegible] had died within [illegible] This table gives an indication of the [illegible] which required to be specially [illegible] and [illegible] casualties and from [illegible] can be [illegible] expected [illegible] with [illegible] group. The figures for mortality in the group were [illegible] week from injury. [illegible] such casualties show multiple injuries [illegible] interpretation of [illegible] must be [illegible] The [illegible] cases for example [illegible] must be stressed otherwise no conception is [illegible] dealt with each [illegible] in the operating theatre

[illegible] transfusion [illegible] 234 and the proportion of seriously injured is [illegible] cases such [illegible] were analysed. All these cases were admitted [illegible] and [illegible] reception units with [illegible] The [illegible] was [illegible] and [illegible] table [illegible] only 48 [illegible] still with [illegible] equipment.

[illegible] in Plymouth [illegible] the slower the rate of admissions [illegible] transport difficulties outside the hospital. This allowed the reception units to [illegible] cases through smoothly and there was usually sufficient spare accommodation to deal with any sudden influx. Conditions might well have arisen, however, in which the Unit

[illegible] work that [illegible] have become [illegible]

The [illegible] such a Unit necessarily depended on the [illegible] high space [illegible] full details some remarks are apposite

(1) [illegible] alternated their operating duties with [illegible] in operating theatre [illegible] at the [illegible] experience and temperament [illegible] anæsthetic duties [illegible] surgeon

(2) [illegible] theatre experience were of the [illegible] which [illegible] lecture [illegible] had a great [illegible] Surgeons worked all night [illegible] daylight [illegible] kill and expectant of the wounded [illegible] cases

(3) [illegible] had to carry out a [illegible] nursing table [illegible] for [illegible] other [illegible] fully trained [illegible] ground [illegible]

(4) [illegible] for theatre [illegible] Sisters for other [illegible] wards or in the theatre

Summary.—The [illegible] with due regard to [illegible] and [illegible] on the least work of all [illegible]

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FREETOWN MEMORIES

By Surgeon Lieutenant H. M. DARLOW, R.N.

For the benefit of those who have not been there, I [illegible] tip of the Sierra Leone peninsula bounded to the north by the [illegible] river to the west by the Atlantic Ocean to the east by the [illegible] and to the south by the Sierra Leone range of jungle clad hills [illegible] altitude of 1,800 ft. It is a huge sprawling native village [illegible] nothing free about it either. Most other things you have heard [illegible] it is for example said to be the only cemetery in the world [illegible]

Admittedly it is no health resort, situated as it is in the [illegible] and tsetse bells of tropical West Africa, but it is by no means [illegible] health point of view there is no dengue nor sandfly [illegible] nor so exhausting as in other parts of the tropics and sub-tropics [illegible] and cholera is unknown, yellow fever has not [illegible] least in the [illegible]—and the typhus group of fevers [illegible] of murine typhus in the natives, typhoid is not nearly so common as [illegible] varicella, varicella, trypanosomiasis, schistosomiasis and [illegible] natives. This almost exhaustive list leaves malaria and skin [illegible] catch, and if this the former has been very satisfactorily [illegible] mosquito control.

Of the skin diseases there is one that must be mentioned [illegible] problems I presents but because of the interest recently aroused by it in this [illegible] *Pemphigus contagiosus*. This disease, a complication of prickly heat—as was recently pointed out by Surgeon Rear-Admiral A. G. Thurp—appears to be caused by [illegible] with the

TABLE [illegible] ALL ANOPHELINES TAKEN [illegible] FROM 1944 TO 1946

	1944	1945	[illegible]
Ja[illegible]	—	Nil	1
Fe[illegible]	—	2	—
Ma[illegible]	—	Nil	
Ap[illegible]	—	1	
Ma[illegible]	7	7	
J[illegible]	3	Nil	
J[illegible]	17	4	
A[illegible]	16	Nil	
S[illegible]	Nil	Nil	
O[illegible]	Nil	Nil	
N[illegible]	Nil	Nil	
D[illegible]	[illegible]	Nil	

TABLE [illegible]

	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
(5) [illegible]	[illegible]
(6) [illegible]	[illegible]
(7) [illegible]	[illegible]
(8) [illegible]	[illegible]
(9) [illegible]	[illegible]

Types of Malaria. [illegible] ab[illegible] 99 per cent. of all cases, the remainder [illegible] tertian and quartan (malaria) malaria.

Sources of Infection. Cline Town, Kissy and Wellington villages [illegible] and east boundaries respectively of Kissy Naval base [illegible] communities in the whole area controlled by the Sierra Leone Government [illegible] authorities in the Freetown district.

The following tables have been provided by the Government [illegible] the palpable spleen and positive blood film rates in the school children [illegible]

	Date	Palpable Spleen (per cents.)	Positive Blood Film (per cents.)
Cline Town	6 4 1941	[illegible]	11
	21 3 1944	11 6	17
	17 8 1944	15	21 1
	17 1 1945	17	16 1
	24 5 1945	21 6	11 1
	17 9 1945	16 6	21 1
	5 2 1946	[illegible]	13 3
Kissy Village	31 3 1943	23	31
	9 1 1944	19	17 [illegible]
	15 8 1944	18	15
	8 2 1945	28	26 6
	16 5 1945	40	20
	13 9 1945	34	28
	1 3 1946	15	28
Wellington Village	30 3 1943	10	54
	5 4 1944	50	44
	25 7 1944	75	71 6
	20 3 1945	[illegible]	20
	7 9 1945	11	70
	22 1 1946	41	53 3

The effect of these sources of infection upon Naval personnel ashore is well illustrated by a series of blood examinations performed on West African naval ratings in June 1945.

Series I. 100 West Africans living ashore in Freetown — Blood positive 8 per cent. Film—Positive 1 per cent.

[illegible] on R.N. Barracks, Kissy [illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible] has in Sierra Leone [illegible] shall [illegible] Kissy Village [illegible] that [illegible] puto [illegible] the [illegible] on Kissy Hill.

[illegible] MALARIA IN THE NAVY

(*a*) [illegible] statistics taken from 1945 to February 1946 [illegible] 36 per [illegible] malaria. The percentage varied [illegible] regular manner [illegible] the rise and fall of the mosquito [illegible] observed [illegible] the [illegible] This disease was never severe and seldom lasted [illegible]

(*b*) [illegible] Barracks show a very high incidence of malaria [illegible] with the other Services and the following figures have been taken at [illegible]

	Central Sick Parade			*Rural Force*
[illegible]	6 7 1945	3 21	4 009	0 1
	13 7 1945	5 0	0 801	0
	20 7 1946	10 6	0 801	0 5

[illegible] to (1) the situation at R.N. Barracks, Kissy, in relation to breeding [illegible] infection and (2) failure on the part of a certain type of mosquito to [illegible] the fact that he doesn't believe it — or that he is frankly averse [illegible]

MEASURES OF CONTROL

(*a*) [illegible] *Anopheles Gambiae* the most serious pest is small pool in border [illegible] must therefore be treated primarily as a collection of small [illegible] water. This is brought about by

(*b*) Construction of drains [illegible] as much standing water as possible into running, water the faster the better.

(*c*) Reverting, if large streams and construction of small piped drains alone, their birds during the dry season [illegible] is rapid [illegible] possible [illegible] the gradual reduction of water.

(*d*) Filling up small pools [illegible] drained although this is not easy owing to the difficulty in finding suitable material with which to fill the [illegible] and [illegible] the rainy season undoes 75 per cent of the previous dry season's work.

(*e*) Lining drains and streams in the [illegible] absence of pebbles [illegible] which [illegible] trouble during the dry season.

(*f*) Antimalarial treatment of all water running or stagnant including [illegible] of such [illegible] pools is for Tanks and storage tanks. Materials used in malaria. This land and [illegible] Diesel oil and kerosene has been the most [illegible] although now that the [illegible] have started to use paris green [illegible] has been found that it is quite as good as the oil.

(*g*) Destruction of [illegible] breeding, harbourage of all receptacles such as tin cans, bottles, oil drums, [illegible] water holding, cartons on pieces of machinery, &c.

(2) *Control of Adult Mosquitoes.* — Unfortunately experiments in the use of house spraying with pyrethrum or D.D.T. have been unsuccessful.

Pyrethrum spraying is not [illegible] practicable by the fact that the living quarters are so

constructed that any spray is immediately carried away by the wind [illegible] the buildings consisting virtually of mosquito proof screening only

The application of D D T in the insides of living quarters was also found impracticable but for another reason it was used as a 2½ per cent solution in kerosene and applied in a quantity roughly equivalent to 25 mg per square foot of surface but the amount of labour required to treat all the accommodation was out of all proportion to the man hours lost due to malaria

D D T application to the unprotected huts of the old West African barracks had singularly little effect in reducing the incidence of malaria or the number of anophelines caught in the buildings The only effect noticed was that after the huts had been treated mosquitoes caught there died in their cups after about twelve hours during which latent period those left in the huts presumably continued to disseminate malaria while alive

It was considered that the time and expense of treating all the resting places of female mosquitoes especially with a stronger solution than 2½ per cent was not warranted It is of interest to recall the conclusions of the civilian malariologists treatment of Kissy Village

It cannot be said that any beneficial effects were produced when used as an alternative to pyrethrum spraying

Prophylaxis All buildings are effectually protected by screening though this is not always as efficient as might be hoped One small hole in the screening will easily be found by a female anopheline in search of a blood feed but she will be reluctant to find the hole again in order to escape and bite a fresh victim Fewer will be thus partially bitten far more individuals than would have been the case had there been no screening Elsewhere the screening is not as good as possible but the number of panels damaged often gets out of hand

All European personnel sleep under mosquito nets at night and the wearing of long trousers long sleeved shirts and socks pulled up is compulsory from sunset to sunrise

Mepacrine was never found to produce any untoward effects but there is no doubt it is not in the form in which the drug is most absorbable The mepacrine in common prophylactic use is used to both kill the parasites and also immunise against the illness induced by the parasites while taking their daily tablet

Progress in Malaria Control Mile 91 Diet

The following figures for R N Barracks Kissy show a satisfactory diminution in the number of cases of malaria since that establishment opened in 1944 In the total enumeration of British European officers and men and Africanally civilians only The figures for the third and fourth quarters of 1945 include a few cases from small out stations previously included at R N Barracks King Tom which closed in July 1945

1944	Second quarter	81 per 1000 of ship company
	Third quarter	167 per 1000 of ship company
	Fourth quarter	76 per 1000 of ship company
1945	First quarter	24 per 1000 of ship company
	Second quarter	24 per 1000 of ship company
	Third quarter	41 per 1000 of ship company
	Fourth quarter	1 per 1000 of ship company

As regards the natives the West African Navy consisted at a conservative estimate of native ratings and trades recruited from all four of the colony colonies plus a small number of fishermen and natives from the territory The difference in physical type was not marked the great majority being of the primitive West African stock On the whole the West African is an honest type of good humoured but lazy and improvident The skull is brachycephalic and the face typically negroid and usually combined to the head and pelvis Beards and pubical hair are unusual though some individuals especially inhabitants of Freetown with a possible distant Caucasian ancestor are markedly hirsute Anthropometrical studies are remarkably difficult I saw one Negroid with an epicanthic fold is fully developed as one still find in any Chinese Hernia in the human is especially notable and rare due to bad nutrition The teeth are good supernumerary premolars common and the wisdom teeth nearly always very well developed The genitalia are not modified in the way found in most southern African stocks

The blood [illegible] no marked traits though perhaps [illegible] commoner than in Europeans. [illegible] natives chosen at random. [illegible] sickling of the red cells after 24 hours [illegible] this uniformity to previous work on the subject. The method used in detail [illegible] to deliver one drop of blood in 0·5 ml. of [illegible] citrate in a small test tube, mix thoroughly and cover with a drop of paraffin. The slide was examined 24 hours later having been sealed first with formol saline. No [illegible] crescents were seen.

The almost invariably but in the study of blood parasites in the form of microfilaria which would [illegible] into every experiment. Three forms were encountered: *Microfilaria diurna*, *M. perstans*, *M. bancrofti* and *Acanthocheilonema perstans*. Investigations into the periodicity and [illegible] results.

Microfilaria bancrofti was a very common finding in West African blood, but it was mainly confined to natives. In a series of 15 per cent. of a series of 250 such natives having positive blood at 09.00. Oddly enough this time of day was found to be the optimum time for examination, both from the point of view of the laboratory staff and the parasites. Only one positive result was obtained in a series of 50 Nigerians and none in Gold Coast natives. On only one occasion was a positive [illegible] obtained from a Gambian and that commonly enough in the afternoon at a time when the natives of Sierra Leone were almost invariably negative. Only one of innumerable Sierra Leoneans examined in the afternoon was found to have active *M. nocturna Bancrofti* in the peripheral circulation.

In the great majority of cases the presence of *M. nocturna bancrofti* in the peripheral blood was unassociated with clinical signs of filariasis. A series of healthy Sierra Leoneans gave the same percentage of positive blood films (about 15 per cent.) as did a series with fever, a series with lymphadenopathy, and a series with oedema of the legs. This tends to substantiate the theory that a second, possibly selective, factor is required to produce clinical manifestations of the disease. It seems unlikely, therefore, that a European poisoned exposed to the risk of infection will develop elephantiasis at some future date, but that Europeans might be found with positive blood pictures. I have no doubt as the vectors of *M. Bancrofti* in Sierra Leone include *Anopheles Gambiae*, the mosquito responsible for 95 per cent. of the malaria.

Microfilaria loa was on the other hand a most unusual finding. I have found it in only two occasions, both in febrile Sierra Leoneans examined in the hospital. The Nigerians seem to be free from *M. loa* as from *M. Bancrofti*, which is surprising considering their home from the home of Calabar swellings. There can have been no confusion between the two species as all examinations were made on stained thick films and every worm can fully examined under the twelfth objective.

The third species *Acanthocheilonema* (*Dipetalonema*) *perstans* never occurred in Sierra Leoneans and Gambians and seemed to be confined to the natives of the two southern colonies. It was found once in a short series of 19 natives of the Gold Coast and nine times in a series of 70 Nigerians, one of those from the latter series with a positive result being also infected with *M. Bancrofti* and *Plasmodium falciparum* in blood.

Venereal diseases and yaws are rife among the natives to say the least of it. Of a series of 200 Africans chosen at random 75 per cent. were found to have positive Kahn tests. A certain Amount of authority regarded non pigmented scars on the glans penis as indicative of heterozygosity in albinism. Admittedly albinos are common in the population, but one cannot help thinking that he had a very pure mind for any ulceration of black skin and particularly chancres and chancroids tend to leave non pigmented scars. It is interesting to note, however, that keloid scarring, common in other parts of the body, never seems to form on the glans.

Doubtless a large proportion of positive Kahn reactions were attributable to yaws, though genuine signs of active yaws were rare whilst active signs of syphilis were relatively common, especially sabre tibia, periostitis, arthritis and primary lesions. Of three cases in whom autopsies were carried out two had aortic syphilis and the third gross lesions of the aortic valves.

A common hyperkeratosis of the soles of the feet is common and generally regarded by both the natives and many medical men as a manifestation of yaws. It is, of course, as often as not associated with a negative Kahn test. It is a significant fact that it was absent from recruits fresh from soft jungle tracks and seemed to be confined to those accustomed to long

[illegible] tarmac roads and laterite [illegible] is that it [illegible] mechanical [illegible] be [illegible]

[illegible] kraals in Africa [illegible] was [illegible] frequently but [illegible] in the form of [illegible] Africa [illegible] but [illegible] the kraals [illegible] which the stuff [illegible] the grasses

The [illegible] confusion [illegible] form [illegible] ramulus [illegible]

Tryp[illegible] study in [illegible] human [illegible] infection [illegible] the north [illegible] to 20 per cent [illegible] have been [illegible] trypanosomes in the peripheral blood [illegible] Kissus from the [illegible] as the infection rate is relatively [illegible] parasites in the peripheral blood [illegible] examined the blood [illegible] hope of finding [illegible] against their [illegible] stain and it [illegible] out when they were [illegible] infection

Tsetse flies [illegible] species *Glossina palpalis* are to be found [illegible] there is [illegible] but highly atypical colony of them living [illegible] Beach which the puparia may be dug up in the sandy soil [illegible] Adult flies were also obtained at the Government Experimental [illegible] where I was able [illegible] to take blood films from pigs mouth and [illegible] and the parasites thus found were always *Trypanosoma congolense*

In August 1945 at the height of the rainy season Africans were going sick with oedematous legs and abdomen there were 42 cases of filariasis living that in all excluding those due to elephantiasis and renal disease [illegible] was well born but [illegible] a diet consisting largely of polished rice In the dry season [illegible] usually augment their diet with mangoes and other fruit thus ensuring [illegible] intake but mangoes are unobtainable in August hence the epidemic Steps were taken immediately to substitute unhusked for white rice and the main ordered [illegible] This was thus used a mainly amongst the cooks who maintained that [illegible] mangoes with [illegible] and that highly *infra dig* Dinner was therefore served with rice husks in a [illegible] and listed until teatime Ultimately a satisfactory diet was obtained and the number of cases fell off rapidly from 32 in August to 17 in September 8 in October 5 in November and only 1 in December

Of noxious animals apart from those already dealt with there were many including a great variety of biting flies There was also the Tumbu fly which lays its eggs on clothes and bedding where the resultant larva lies in wait for a unsuspecting victim The larva bores into the skin and causes a most painful furuncle lasting six weeks or longer boil which often goes undiagnosed until the maggot [illegible] Scorpions fortunately are rare but there are several poisonous snakes including the [illegible] and a small and very common viper But even the animals [illegible] common wall lizard for example—*Agama agama* [illegible] during the year gets infected with a plasmodium like blood parasite *H [illegible]* [illegible] found in the peripheral blood of most adult lizards during the [illegible] and March Two other hemoprotozoa were found [illegible] which seem to be unrecorded in the literature of animal parasitology Rats which were dissected as a plague control measure were found to suffer from hydatid cysts of the liver a form of trypanosomiasis and infestation of the peritoneal cavity by pentastomids That they were also afflicted with typhus is evident from the [illegible] of murine typhus in Africans Distemper was very common among the [illegible] and feline population and accounted for the deaths of two very valuable [illegible] a pup and a mature dog

In conclusion it must be stressed that though the [illegible] provided much of medical and biological interest it was a happy day when I shipped back with the [illegible] for home I hope

A CURIOUS REFLEX MOVEMENT OF THE UPPER EYELID IN OCULOMOTOR PALSY

[illegible] Deviation of the Sound Eye Producing Elevation of the [illegible] Upper Lid in Ophthalmoplegia Due to Intracranial Aneurysm

By Surgeon Captain LAMBERT ROGERS, [illegible] R.N.V.R.

Consultant in Neurosurgery

[illegible] Surgical Consultant, British [illegible]

A [illegible] movement of one eye and the paralysed upper lid of its fellow [illegible] third nerve palsy due to an intracranial aneurysm [illegible]. The movements [illegible] with four photographs (figs. 1 to 4) for which I am indebted to Surgeon [illegible] Phillips, R.N.

[illegible] turned slightly outwards the drooped right upper lid begins to open [illegible] turned further to the left the elevation of the right upper [illegible] the left eye is directed as far laterally as possible [illegible] right eye the dilated pupil of which can be seen [illegible] is quite unable to open the right eye when looking forwards [illegible] the left eye turns to the left however the right [illegible]

CASE HISTORY

[illegible] On 24th [illegible] 1945 [illegible] [illegible]

[illegible]

[illegible] R.N.H. [illegible]

COMMENTARY

[illegible] of the eyeball and the opposite upper lid [illegible] (Duncan, 1941) [illegible] this point [illegible] Through the kindness of Dr. K. B. Nead [illegible] illustrated the nerve [illegible] from the wall of the aneurysm.

[illegible] (1942) and [illegible] and Woodhall (1938) have noted cases of elevation [illegible] of an apparently [illegible] paralysis [illegible] by the muscles innervated by [illegible] In the case now reported the anomalous movement occurred when the sound [illegible] (1935) has noted two similar cases, one in a young [illegible] following fracture of the base of the skull in which [illegible] until fifteen months after the lesion of the nerve [illegible] the other in a woman aged 35 with basal syphilis and [illegible] the paralysed lid opened somewhat when the sound eye [illegible]

[illegible] Right [illegible] ptosis [illegible]

An emotional stimulus such as fear, anger or other form of excitement may produce elevation of a paralysed lid. Walsh and King (1942) have recorded an example in a man aged 23 who for fifteen years had had a complete ptosis, the result of an [illegible]. During periods of emotional stress the affected lid would suddenly open and remain elevated for some seconds or even several minutes. M. B. Bender (1938) observed a similar [illegible]

[illegible] had secured the third notch [illegible] dramatically fought and [illegible] Physically in the [illegible] phenomenon is jaw winking [illegible] which although the lid cannot [illegible] in another [illegible] jaw moved to the opposite side [illegible] numerous lid movements [illegible] tion between outpatient [illegible] the time of fright in which the [illegible] sustained form [illegible] considerably greater in the [illegible] When [illegible] response to eye [illegible] 1945 and this is if this may be due to [illegible] This effect however [illegible] of normal inhibited [illegible] the eyelids [illegible] eyelids are closed in eye [illegible] that is not [illegible] the closed lid to open [illegible] the eyelids invariably [illegible] that the [illegible] reflexes apparent in this [illegible] normally an [illegible] of a normal but usually [illegible] pathological [illegible] Macdonald [illegible] ment (e.g. oculo-aural [illegible] be verified in [illegible] It is possible that [illegible]

SUMMARY

[illegible] the movement [illegible] applied in mutilomator palsy [illegible] the opposite and normally [illegible] nerve is intact and in [illegible] functions [illegible] published papers [illegible] this [illegible] refuses and the [illegible] responsible for their publication needs assessed

[illegible] General of the Navy [illegible] medical officers in charge [illegible] other facilities [illegible] following up this case

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RETURN TO SINGAPORE

BY SIR [illegible] ASSOR [illegible] J. HOLKER [illegible]

[illegible] in May 1938 when I arrived from the United Kingdom [illegible] Naval [illegible] until [illegible] January 1942 when [illegible] from the island [illegible] that period [illegible] from the island [illegible]

[illegible] September 1945 immediately after the [illegible] the first [illegible] months [illegible] the [illegible]

FIRST IMPRESSIONS

[illegible] following, after [illegible] signs [illegible] Rollies famous [illegible] Square [illegible] still looks [illegible] the [illegible]

The city did not [illegible] damaged heavily. A [illegible] warehouses and buildings [illegible] hence the [illegible] apart from this and [illegible] of Chinese junks lay [illegible] was anchored in the [illegible] cosmopolitan [illegible] Raffles Place. [illegible] and native quarters [illegible] and the smaller Indian [illegible] somehow or other they [illegible] fantastic prices but seemed [illegible] were gazing with awe at the [illegible] jewellery, fountain pens and [illegible] to those who had recently [illegible] Asiatics were glad to see us [illegible] a tribe of the Japanese [illegible] thus to the many British people who fell into Japanese hands in Singapore the domination of Malaya by the forces of Nippon is short lived, certainly this is so in the grand panorama of history. They started off with many advantages and yet they have left scarcely a single item to their credit and nothing tangible to remind future generations of their reign. The history of Malaya up to 1942 has already been written. By the successful outcome of their treacherous attack the Japanese lost a jewel in the British Imperial Crown which was shining brighter than that of India. They acquired a country rich in natural resources, highly organized, prosperous and well nourished, having standards of sanitation which were a model to the Eastern world. In contrast to this they have left behind them disease, poverty, malnutrition and rampant immorality. 50,000 dead and missing in Singapore, 500,000 from the whole country, was what three and a half years in the Co-Prosperity Sphere did for Malaya.

One very notable change in Singapore is the diminution in the number of rickshaws. These have been largely replaced by cycles and sidecars, the latter having two seats and being known as "trishaws" they were first introduced in Penang, in 1941 and reached Singapore later. Jeeps, station wagons and lorries have replaced the luxurious cars in which the "Tuan Besars" — Big Shots — of Singapore made their leisurely ways to their offices and clubs. Raffles Square car park is bare and deserted and alas, Change Alley is no more. The famous Singapore Exchange Mart received a direct hit from a bomb in 1942, altering the aspect of this particular section of the city. The ubiquitous N.A.A.F.I. has established itself on the ground floor of Robinson's fine new store which was completed towards the end of 1941. The Tanglin Club that pre-war Mecca of Singapore society is quite unclamaged but like almost every other European owned building and office it has been stripped of all its valuable furniture, glassware and crockery. The capital cinema which was being used as a Japanese headquarters was blown up by saboteurs but the other cinemas are in working order although the air conditioning plants have been removed. E.N.S.A. arrived early in Singapore and has been giving shows nightly at the Garrison Theatre for the Services. All accounts up to the Japanese occupation have been preserved in the Singapore banks, the Asiatic staffs having hidden the books during their time. I was amazed on returning to Hong Kong and Shanghai Banks a few days after my arrival to be shown my position as found all in order and up to date.

Short History of the Japanese Occupation

On 15th February, 1942, Lieutenant General A. E. Percival on behalf of the British Forces in Singapore surrendered unconditionally to General Yamashita, the so-called "Tiger of Malaya." Enemy forces poured into the city and all British personnel were either taken prisoner of war or interned. The Japanese had thus completed the occupation of Malaya, a new era had begun. A public holiday was proclaimed throughout Japan and the name of Singapore altered to Shonan which may be freely translated in the flowery Japanese language as "The beautiful jewel of the Southern Seas."

Conditions were chaotic for the first few days after the surrender and a pall of smoke hung over Singapore due to many fires and bomb damage. By the 19th hour the

situation was in a stable and all European civilians were assembled on the Padang (a large open space opposite the Supreme Court). 60 leading municipal officials including the Director of Medical Services and the municipal and rural health officers were called out and told to carry on with their respective organizations. The remainder with a few exceptions were marched to internment at Changi Gaol 15 miles away and were allowed to take with them only what they could carry. Part of the surrendered military forces were employed to clear up bomb damage and garbage in the city but later they were confined in their barracks until prisoner-of-war camps were established.

From the public health point of view the following is a brief record of conditions during the first few months of occupation —

Water supply had failed in many places, sanitary services were disorganized and mosquitoes and flies were breeding everywhere. It seemed as if a severe typhoid epidemic was inevitable but on 21st February 1942 at the suggestion of the British medical officers an order was issued by the Japanese that the whole population of Singapore was to be inoculated against typhoid. Within two months four fifths of the community had been protected, the remainder being done gradually at a later date and as a result of this measure there was almost complete freedom from the disease for the ensuing six months. A drive against smallpox was also instituted and the vast majority of the population was vaccinated. By April 1942 however malaria had started all over the island and became a very serious problem. Although this was not immediately evident bomb damage which had upset the extensive drainage system in the suburbs was responsible for this outbreak. The health staff under the direction of British medical officers made every effort to cope with this problem but they were badly hampered by lack of co-operation from the Japanese authorities. Improvised measures had to be employed to repair the damaged anti-malarial works and fascine or stick drains were employed on a large scale, these having been used originally in Malaya to get rid of dangerous sub-soil water and seeping prior to the introduction of earthenware pipes. The measures thus taken proved effective. Typhoid appeared early in 1943 and continued sporadically throughout the entire occupation. In August 1944 the *Isama Maru* arrived off Singapore with 40 dysentery cases aboard. Infected vegetables were thrown overboard near Changi in the north-east of the island and these were eaten by some Malays who developed the disease later when the strain of vibrio was found to be identical with that in the ship. Dysentery in food handlers and dwellers in this coastal area were inoculated against the disease and it was soon brought under effective control, never reaching serious proportions. In all 164,000 anti-cholera inoculations were given. All the sera and vaccines were produced at the Institute of Medical Research of Singapore which did remarkable work all through the occupation. The Japanese were extremely frightened at infectious diseases took enormous interest in this organization and the school became much enlarged. It was in fact converted into a large serum and vaccine institute and many Japanese scientists and doctors were employed there.

Towards the end of 1943 the general health position appeared satisfactory and the British medical officers who up to then were holding key positions were relegated to internment. The Japanese now took over complete medical control. The final situation was still critical due to the considerable stocks still left in the island but the situation improved to details largely because of this and because of their dislike of working under direct Japanese supervision. Inversely and ironically in the health department there was disaffected and traditions started to develop in consequence. The medical organization of the Japanese now became apparent and diseases began to appear on a large scale. The local population was becoming very ill-nourished and medical requirements of essential materials were distance. Without British help it seemed as if the problem was too big for the Japanese to cope with. The rice situation became really bad at the end of 1943 the ration being eight ounces for a man six for a woman and four for a child per month (one katie 1⅓ lb.). Rice is the staple diet of all Asiatics and nothing can really take its place. Normal pre-war monthly consumption was 20 katies and the issue then were now receiving, placed the Singapore community on a starvation level. Early in 1944 the seriousness of the situation came home to the Japanese. Although market gardens, first been encouraged, in fact in the beginning, a great more food campaign was started and almost every available piece of land in Singapore was turned into a vegetable garden. In order to obtain fertilizers the conservancy system was altered and raw sewage used to manure the

ground. At the same time all anti-malarial control measures ceased, the men employed in this work being diverted to food production. Lack of adequate transport was becoming a serious problem; only very urgent sick cases could be brought to hospital and out-patient dispensaries found it difficult to function. Inferior Japanese drugs were a further cause of lowered medical standards and, as 1944 drew to a close, the situation in Singapore was becoming grave indeed. Adequate quantities of rice could no longer be obtained and even the small rations issued could not be kept up. In spite of increased production of tapioca and other vegetables, signs of grave malnutrition among the community began to manifest themselves. Conditions became even worse in 1945 and issues of rice ceased in many places. It could still be purchased in the Black Market, which was now reaching fantastic proportions for this and other commodities—for example an aspirin tablet cost a hundred Japanese dollars. By now the rural areas were stricken with malaria and this was spreading to the city. Dysentery and typhoid were both markedly on the increase, and due to over-crowding, pulmonary tuberculosis was reaching alarming proportions, veneral disease—the usual legacy of Japanese occupation—was spreading unchecked, famine oedema, beri-beri, skin diseases and tropical ulcers bore witness to the inadequacy of the diet.

Singapore remained free from plague during the occupation, nor did cholera reappear after the one outbreak in 1942 and, thanks to compulsory vaccination, there was no smallpox. In the spring and summer of 1945 general conditions continued to deteriorate; the Japanese were losing interest. Their dream of conquest was over, their sands were running out. They thought they would have to fight for Singapore and such manifestations as nutrition and sanitation among the general community became of secondary importance. The local people were carrying on as best they could, with disease taking an ever increasing toll of lives; little but hope remained in them. It is difficult to appreciate with what tremendous joy and relief they welcomed the liberating forces on 4th September 1945. The preliminary surrender was carried out on board H.M.S. *Sussex* and eight days later the final terms were signed at a ceremony in which the Supreme Commander greeted the cheering crowds from the balcony of the Municipal Buildings. The rule of Nippon was over and the Union Jack was hoisted there by Sir Stamford Raffles in 1819 once more flew over Singapore.

History of the Eurasian Internees

3,470 civilians, of whom 500 were women and children, fell into Japanese hands on the surrender of Singapore. Most of them had, since first hostilities began, lived in every comfort but their place of internment was Changi Gaol, the main prison for all types of criminals.

The sexes were immediately separated, and were not allowed to communicate with each other except on very rare occasions; if the men were in look-out parties, the women's camp from their upper floor could see them. Families were broken up, all consents to the Japanese guards resulting in sudden death. This, the Nippon system of quiet but effective punishment of the Japanese, and was done in a fiendish fashion. Living conditions in the camp were primitive in the extreme, but quickly became worse, affecting the general well-being and health of the inmates. After much negotiation the Japanese arrangements were made to get some food from the city, that is, of course, still a large supply of such commodities on the Island. All food was shared by the internees, there was no forced labour, but they formed their own security guard. As they had been allowed to bring only certain articles with them, they could not, in the beginning, do much to supplement the official rations, the food which was issued was of a very poor standard and only sufficient to keep people out of hospital. In an effort to supplement the official rations, the Food Committee, which was established, and work on an allotment, voluntary labour, was started. The camp was well provided with doctors, 105 in all, including Japanese, Eurasians, Malayan Medical Students, but only 12 were used in medical duties. When these were expected, all the others were being left behind. Their services, in addition to those of the medical staff, were of immense value to us, and their immense experience in tropical diseases was put to the country at a time when it was most required.

The initial conditions were, on the whole, satisfactory, the camp was settled in the autumn of 1944 and there were no losses between October and December. Early 1945 when the internees left Changi for another camp, there had been, during the 3 months, 8 cases of malaria. An epidemic of dysentery started at the same time, and led to malaria resulting in 13

deaths [illegible] in the camp for these [illegible] ing after the women [illegible] disease was soon brought [illegible] remained reasonal [illegible] report of 1943 but on 10th [illegible] the Japanese Gestapo paid [illegible] camp. The double [illegible] celebrated in Singapore [illegible] is a great festival as it is the day on which the Chinese Republic [illegible] It was a black day for the internees however three [illegible] and they were punished by having their rations halved [illegible] was [illegible] drastically that signs of malnutrition [illegible] vegetable cultivation and various underground methods [illegible] illustrated and by the beginning of the New Year although [illegible] weight the camp was holding its own. During this period [illegible] malaria already referred to there were no other serious [illegible] mother of invention and although all the wireless sets had [illegible] one was concealed between the bristles and the brush [illegible] and the other was in the bottom half of a kettle which [illegible] The internees were therefore never without some news of the [illegible] turn of the war at the end of 1943 heartened them considerably.

In 1944 the Japanese [illegible] name the entire camp to Sime Road situated in a sparsely populated area [illegible] island. There were 91 huts covering an area of 65 acres with a main [illegible] mile from the Female section. All inmates from Changi Gaol were taken there in May 1944. Jews and Eurasians who up to this time had enjoyed a limited freedom [illegible] gradually and the numbers then rose to 4,700. From the health viewpoint the [illegible] very unfortunate.

Malaria. Malaria [illegible] almost immediately and 177 cases occurred in the first fortnight. Up to the end of the year there were 440 cases approximately one seventh being malignant tertian. [illegible] sufficient drugs were available (the Japanese had provided some in 1944 [illegible] representations) and effective treatment was kept up. Quinine atebrine and [illegible] were employed and the dosage was in accordance with the most modern recommendations.

Scrub typhus. There was a small outbreak of scrub typhus in 1944 seven deaths being recorded out of 37 cases. Immediate anti rat measures were enforced and 168 of these vermin were trapped in one month. Except the Japanese display of alarm at the outbreak of this [illegible] which was very rare amongst Europeans before the war. The Japanese are of [illegible] particularly interested in scrub typhus or tsutsugamushi as it is known to their medical circles—for the vector which is the larval mite *Trombicula akamushi* is claimed to be [illegible] identified by Japanese scientists. Recent investigations have shown that the name scrub typhus is somewhat misleading for the disease can be contracted not only by [illegible] contact with scrub but also through having rats in close proximity. I assert occurred in Samar Philippine Islands during my visit there in June 1945 in United States Forces [illegible] movements had been in built up areas.

Diphtheria. This appeared in June 1944 there being 101 cases in all. These were treated [illegible] and recotannin and there were no deaths.

Dysentery. Only three deaths were attributable to this disease which appeared in the [illegible] of immunity.

Typhoid Fever. Mild symptoms were present among many of the internees. Clinically [illegible] with enteric. This disease is caused through lack of animal proteins [illegible] is really a [illegible] disease.

Typhus. Cases of longer fever occurred at the onset but a degree of immunity was [illegible] later.

Typhoid. No [illegible] facilities did not exist for the complete examination of all [illegible] but it is considered that an epidemic of enteric was fairly common. 15 deaths [illegible] recorded.

Other infections and tropical ulcers were the main troubles under this [illegible]

Deaths. Out of the peak number of 5,400 internees there were 218 deaths [illegible] this period of imprisonment the average age at death being 58 years

Maltreatment

Beyond frequent [illegible] shippings and occasional [illegible] there was no evidence of [illegible] ill treatment. About 50 of the inmates [illegible] at the headquarters of the Kempai Tai (the Japanese [illegible] 1943. One of these is known to have been executed. 14 died subsequently [illegible] to the camp after surviving periods of imprisonment.

With the exception of 300 engineers who spent the [illegible] 1943 [illegible] remained in Singapore.

I interviewed many of the repatriates—some of whom [illegible] in the *Monowai* the first liberation ship to leave the island. Nearly all showed obvious signs of their terrible experiences and some were thin almost to [illegible] emaciation. They were remarkably cheerful, however, hungry for news of home and gratefully grateful for the few small things that we were able to do for them.

Military Prisoners of War in Japanese Hands

In order to complete the picture of all those who suffered under the Japanese occupation a short summary of health and disease conditions amongst Service personnel both in Singapore and later in Siam is given below.

Singapore

100 000 men British and Indian troops fell into the hands of the Japanese on 15th February 1942—described by Mr. Churchill in a subsequent broadcast as the greatest military disaster in our history.

All British forces, including the volunteers, were sent to Changi which was the big Army centre in pre-war days and which was not far distant from the gaol where the civilian population was interned. Indian troops were immediately segregated from the British their European officers being withdrawn from them.

Problems of malnutrition and disease soon appeared among the British prisoners. As can be readily understood during the actual battles of Malaya and Singapore great difficulty was experienced in providing adequate food supplies. The surrender brought them no relief in this respect and the diet the following month consisted of:—

Rice	8 oz	Salt	1 oz.	Milk	½ oz
Sugar	¾ oz	Flour	2 oz	Butter	1½ oz
Vegetables	1 oz	Tea	½ oz.	Cheese	½ oz

Due primarily to the lack of animal proteins, the seeds of avitaminosis and famine œdema were sown. Much later on, when weakened by illhealth and manual labour, this became apparent.

Bacillary dysentery. Within four weeks of arriving at Changi bacillary dysentery started and by June there had been 8 000 cases with a mortality rate of 10 per cent. Treatment was made difficult by the little sulphaguanidine available, but the situation was kept under control by the end of the month and no further large outbreaks were subsequently reported.

Amœbic dysentery. Isolated cases of amœbic dysentery occurred during the whole period at Changi but the secondary cases were satisfactorily with control, at which there were sufficient supplies.

Malaria. There was malaria almost from the outset. 34 000 attacks being reported. These cases were largely recurrences, although there were 1 000 fresh infections in one month. Malaria was thus a source of great anxiety and the supply of drugs limited.

Diphtheria. A serious outbreak of this disease, largely of the nasal type, of infection caused much alarm. There was very little serum but due to careful nursing, mortality was not much higher than usual.

Dengue fever. Some cases occurred amongst the newest arrivals but gradually immunity developed.

Deficiency diseases. Up to the autumn of 1942 signs of deficiency diseases were not particularly evident, but the picture changed.

Skin diseases. These were started in the tropics throughout incarceration, lack of vitamins militating against normal healing, and [illegible] periods of inoculation.

Siam

The Japanese had long planned to build a railway from Bangkok in Siam to Moulmein in Burma, as part of a great strategic plan to carry out their newly acquired and somewhat

illusory [illegible] With the [illegible] in view British prisoners in batches of [illegible] thousands, were sent up to Siam the majority being relieved every six months by fresh groups from Changi. The first large scale movement commenced in September 1942. The men were sent by rail from Singapore, crowded like cattle into trucks and were ordered off the train at Banpong, a small town on the border of Siam and Burma, from whence they had to march to their destination, a distance of 180 miles. They were sparsely clad, often barefooted and sacks were their bedding in many cases; they had to cross mountain ranges and plough their way through swamps, sleeping in the open at night. When they eventually arrived they found that no arrangements had been made for their reception except for a little food. Of shelter there was none—they had to make their own and generally improvised arrangements if they wished to have the smallest degree of comfort. They found themselves in a disease ridden country where already a huge reservoir of malaria existed among the natives. They were housed amidst the alien corn. Their plight was pitiable and can only be left to the imagination.

In all about 40,000 British prisoners of war were employed on this project and, as was only to be expected in the frightful conditions in which they were forced to live and work, disease decimated their ranks. In the early summer of 1943 a wave of cholera carried off many thousands. Dysentery and malaria were their constant companions and blackwater fever, scrub typhus and meningitis all became prevalent, while deficiency diseases and famine oedema added to their burden and tropical ulcers and skin diseases were everyday occurrences. The railway was finished by the end of 1944, but only 24,000, most of whom were diseased, ulcerated and emaciated, got back to Singapore. The liberating forces rescued many when they entered Siam. In more than was at first anticipated—but many thousands lay dead and dying in the fetid atmosphere of these jungle prison camps. Out of 400 members of the Malayan Volunteer Force 260 died in Siam and Burma—65 per cent. of the total number.

Contrary to what one might have expected, the proportion of the Indian Army sent to Siam was small. A large number joined the so-called Indian National Army, which they hoped that by doing, so they would be released from imprisonment and would not be sent to Siam, and throughout the Japanese occupation this army was stationed at various parts of Malaya as well as in Singapore, and had a limited amount of freedom. A large part of the Indian troops, however, including the entire force of Gurkas, refused to join this organization. Many of those who did join did so only to carry out sabotage and subversive propaganda, and by underground communication with, or acting under the orders of British officers. The treatment of members of the Indian Army who refused to cooperate with the Japanese was cruel in the extreme; they were beaten and half starved, but, although the Gurkas were tortured, they held out to the end.

The health conditions among the Indian National Army were on the whole satisfactory; they were well looked after and given extra rations. The Indian prisoners of war, however, suffered from every disease that was prevalent in other prison camps in the island; their tuberculosis rate was especially high, and mental illness was widespread.

In the occupation of Malaya the Japanese showed that they had no thought of learning from the Germans as regards humanitarian ideas and treatment. Faced with the same problem, but on a large scale, in their territory, the railway project must take first place in their priorities, the requirements of prisoners of war were largely responsible for the appalling death rates.

How many of us take our health so for granted and how often we complain of illness and accused of some malingering. How we should be thankful from this terrible [illegible]

Medical and health administration under the Japanese

Shortage of essential supplies and transport are serious hindrances, there is no doubt that if being made to rest in the city to [illegible] conditions. Possibly the fall of Singapore [illegible] Japanese, but it was expected to be responsible for this and the imports of goods have been much up to expectation.

[illegible] magnitude of the task, [illegible] the difficulties may be judged by the fact that 8,000 [illegible] were required for Singapore for the month of October but only 20 [illegible] were available for its distribution. In spite of this difficulties the rice ration issued was three times the amount provided by the Japanese at the optimum period of their occupation.

It is not possible at the present time to assess the degree of malnutrition in the general population all classes suffered privation but it is the poorer section of the community unable to get extra supplies from the Black Market who are now showing [illegible] malnutrition deficiency diseases and in some cases famine oedema Two nutrition units are working under the auspices of the civil authority are at present carrying out a health survey of the entire population and visiting all homes Red Cross representatives are working side by side with these nutritional units and are thus able to implement recommendations on the spot essential foodstuffs and vitamin tablets being provided as well as the necessary drugs Concurrent with this work vaccination against smallpox and inoculation against the typhoid group are being carried out on a large scale

Investigation so far has shown the following list of diseases to be the most prevalent in the order given below —

Malaria
Venereal disease
Pulmonary tuberculosis
Deficiency diseases
Typhoid and dysentery

Skin diseases and helminthic diseases are very prevalent but no cases of cholera plague smallpox or typhus have been reported since the liberation

Malaria Apart from the centre of the built up area malaria is found all over the island and hyperendemic in places In order to cope with control measures Singapore has been divided into 13 areas each under a qualified sanitary inspector and the work is proceeding smoothly although hampered by inadequate transport and warden equipment The most highly populated areas have the highest spleen rates The work of the rural areas in Singapore from malaria is extremely difficult to control and will take long time

Venereal disease These are widespread The civil authorities do not know but there are 3 000 infected women The usual prophylactic measures are being adopted and regulations for the compulsory treatment of prostitutes and for the notification have been made

Tuberculosis Internal foci in lymph swelling are as well known as in other tropical countries especially for the increased incidence of this disease Roentgenological tests and examination of contacts is now proceeding but considerable improvement may be expected in the near future

Deficiency diseases The extent to which these were present is not so marked but among the coolie classes particularly the spleen enlargement has been very marked in many cases A large Javanese labour force approximately 9 000 imported by the Japanese during their occupation were the worst sufferers I saw 800 of these unfortunate men in large camp that were in a shocking condition and emaciated to the point I stated in

Typhoid fever Enteric fevers are being reported frequently but there is no evidence of special infection

Dysentery Although there are some cases of amoebic dysentery the bacillary type is by far the more general

Skin diseases Tropical ulcers have increased in number and there are many cases of tinea and of scabies

Helminthic diseases These are always common amongst the poorer population and the lowered standards of hygiene under the Japanese have greatly increased the [illegible]

Hospitals

All civil hospitals are open in working order and functioning to two [illegible] As a temporary measure the Singapore General Hospital has been taken over for the treatment of Service personnel but it is anticipated that it will be returned to the civil authorities shortly Nearly all the hospitals in Singapore are at present occupied and a temporary 3 000 bedded hospital has been improvised in Neo Soon Village where 2 000 destitute Japanese are being healed It has been found necessary to open an additional hospital to deal with the large numbers of pulmonary tuberculosis cases and a school has been taken over and adapted for this purpose There is a grave shortage of British medical officers for the civilian community there being only 39 for the

while [illegible] are in Singapore. Most of the nursing is [illegible] Eurasians and Asiatics. [illegible] Services.

ESSENTIAL SERVICES

[illegible] problems in the early days of the [illegible] Singapore gets its [illegible] Pulai River 40 miles to the [illegible] land but the Japanese [illegible] pumping, maintenance and the rest [illegible] so that secondary [illegible] the only available sources of supply [illegible] water was considered [illegible] state and insufficient chlorine [illegible] sterilize it properly. [illegible] 137,000,000 gallons of water [illegible] the island. For drinking purposes [illegible] still had to be boiled [illegible] supply [illegible] full.

Sewage [illegible] The municipal sewage plant and [illegible] of the installation [illegible] generally disfigured [illegible] and there was [illegible] The primitive habit [illegible] by the Japanese of using night [illegible] human manure was immediately [illegible] areas where [illegible] lack of suitable man power and [illegible] impossible.

Refuse disposal [illegible] sadly into neglect but clearance is [illegible] of the large [illegible] of all descriptions.

Power and light [illegible] exercised in this special [illegible] a great deal. The machinery [illegible] worn out.

Quarantine In the air [illegible] port medical officer quarantine [illegible] is carried out by the Naval [illegible] authorities. St. John's Island lying short distance outside the harbour is the quarantine station for Singapore. The disinfecting machinery is in good condition and facilities exist there for the segregation and surveillance of up to 5,000 contacts.

Harbour facilities The damage done to wharves and storehouses is considerable in some places.

Education During the Japanese occupation all schools were closed but 21 have now reopened although it is understood that only one European education officer is present to reorganize the system.

General In my opinion the menace of disease which is at present so formidable in Singapore will revert to its pre-war level in approximately one year provided that normal progress suffers no major interruption.

H.M. NAVAL BASE

The Naval Base is on the north shore of Singapore Island connected with the mainland of Malaya by the Johore Causeway and access to the town of Singapore is by road, rail and sea. The distance by sea is about 36 miles and by rail about 18 miles, two roads, the Bukit Timah road about 18 miles and the Thomson road about 14, connect the Base to the city. It occupies an area roughly the shape of a half crescent extending for about five miles. The Khut eastern end of which is about 14 miles wide. The causeway, rail tapering to about 20 yards, sufficient to carry the access road and railway behind the shore.

Since the Naval Base was first envisaged considerable modifications and alterations have been made in the original scheme. By December 1941 however nearly all construction work had been completed and for all practical purposes the Base was then a going concern. The great graving dock and the numerous machine and repair shops were in full working order.

15,000 Asiatics were employed, most of whom with the exception of a few of the staff were housed in the Naval Base area. European residences and permanent buildings for the Asiatic labour employed by the Admiralty had been completed. Rest shore accommodation was sufficient to house upwards of 1,000 officers and ratings.

Water was taken from municipal sources, one from a large reservoir 10 miles north of Johore and the other from the reservoirs in the island. The Base had its own power and lighting system. Sewage disposal was by water borne sanitation connected by an Imhoff tank. The effluent discharging into the Straits of Johore and waste matter being dealt with by a large incinerator situated near the tank.

From its earliest days the health conditions of the Naval Base had been a matter of great

[illegible] was in but if not the [illegible] certainly the most malarious in the island but [illegible] a serious outbreak [illegible] 1932 when there were 4 000 cases there was no further epidemic of cases A [illegible] Europeans have [illegible] dengue fever as a sporadic [illegible] and most [illegible] United Kingdom developed the disease shortly after arrival It was [illegible] mosquitoes (*Aedes aegypti*) responsible for conveying the disease had their breeding [illegible] the cuttings of the houses but early in 1940 all the cuttings were [illegible] the houses and the incidence of dengue fever was thereafter [illegible] proportion

The Naval Base had now become a health sanctuary East from the [illegible] two [illegible] from disease and insect pests this was the first [illegible] Naval medical and health officers In his book Malaria Control 1940 Sir [illegible] the Surgeon-Rear-Admiral congratulated the Admiralty on the successful [illegible] the Naval Base [illegible] as a similar triumph to the dramatic survey [illegible] the ravages of malaria and relapsing fever during the building of the Panama Canal

The End of a Chapter

The arrival on the southern coastline of Johore of Japanese [illegible] 8th February 1942 made the Naval Base untenable from a working viewpoint On the [illegible] day its innumerable activities were suspended all Asiatic typhoid [illegible] closed Naval personnel were ordered to leave and to [illegible] and that same evening units of the British and Indian Army [illegible] Naval installation The Japanese Army crossed from the mainland on 8th February [illegible] day they cut across the island isolating the Naval Base which they planned to have [illegible] within eight hours

Work was first started on the Naval Base in 1923 and the estimated [illegible] of surrender was £60 000 000 sterling

The Years of Neglect

With the final surrender of Singapore the Japanese Navy took possession of the Naval Base area The fleet shore accommodation was taken over in offices [illegible] staff officers and senior officials of the dockyard occupied the more [illegible] A certain number of the original workers were employed but no new construction was [illegible] taken and the Base population fell considerably Work was however continued [illegible] of the installations which had not been fully completed bomb damage was repaired [illegible] an interval minor refits were carried out

The Japanese maintenance department seems to have been [illegible] and the high standards of sanitation and hygiene which had been a previous [illegible] the Base were no longer upheld As the result of this there was an epidemic of malaria [illegible] the armament depot in the early summer of 1942 no anti malarial work having been [illegible] up to this period Following this outbreak a health department was formed and [illegible] for malaria adopted and by the following August the incidence of the disease was considerably reduced but this department failed to maintain good hygiene standards and dysentery and intestinal diseases became prevalent Then were [illegible] epidemics [illegible] on a large scale outbreak of tropical diseases up to the middle of 1944 During this period when the Grow more food campaign was introduced various areas in the Base were used for that purpose and anti malarial squads were not allowed into these places All the men employed in this work were turned over to the task of vegetable cultivation [illegible] following on soil disturbances a large number of seepages appeared and with pools of stagnant water unattended mosquitoes became very prevalent once again After the heavy Allied bombing in 1944 the few remaining members of the health department were used to build air raid shelters and clean up bomb damage and the reorganization caused [illegible] The occupants of each cookie line were told that they themselves would have to look after the cleanliness of their own quarters and surroundings which merely resulted in blocked drains and in heaps of garbage being strewn all round the Asiatic quarters

By now the outside areas of the Base were assuming a jungle like appearance the drains had fallen into disrepair and grass was six feet high in places [illegible] vegetable cultivation sewer manholes were blocked and used as cesspits night soil was collected from them and

spread over the vegetable gardens in its raw state. All [illegible] pigs and cattle wandering freely around the European [illegible].

Although the Japanese destroyed all the hospital records [illegible] tenancy, malaria, dysentery and other intestinal diseases [illegible] the Naval Base.

PRESENT CONDITION

During my stay in Singapore I carried out a complete survey of the Naval Base. [illegible] first visit I drove to the Woodlands Gate entrance, pausing for a few minutes to look at the Johore Causeway, which had become famous in history since I had last seen it. Why had it not been effectively demolished at the end of 1941? Looking at its immensity of solid concrete I could not help thinking how unjust had been the criticism [illegible] nothing but an atom [illegible] could have done the job properly, and that was not [illegible].

As I went into the Naval Base, impressions came crowding through my mind, and familiar [illegible] and landmarks kept coming back to me—but how the picture had changed! When all had been neatness, now all was disorder: grass many feet high, roadside drains overgrown [illegible] deserted and crumbling coolie lines, houses badly [illegible], and gardens [illegible]. The oil tanks at Senoko were [illegible] and blackened with smoke. [illegible] dismantled [illegible] most of the big sheds and workshops had been devastated by [illegible] the damage had been confined to this [illegible] structural damage [illegible]. With [illegible] Jackson [illegible] Sir John Jackson [illegible] Naval Base. [illegible] hospital [illegible]. The medical offices [illegible] Naval Hospital and the permanent Admiralty [illegible]. Generally speaking, only these permanent [illegible] the temporary buildings were deserted and had fallen into disrepair. [illegible] built for the [illegible] suitable for this purpose. The armament [illegible] to have suffered no major damage. At the Naval health [illegible] Asian [illegible] who had been [illegible] in Singapore [illegible] told harrowing tales of their troubles during the occupation [illegible] once more and showed great kindness to [illegible] some of my possessions [illegible] I had lived for three years. There [illegible] Marine sentries [illegible] Japanese Admiral stopping there. [illegible] He spoke a little English and was extremely polite, and his sentences were interspersed with frequent [illegible]. Except for a few decrepit chairs and [illegible] nothing remained in the house. Even the children's swing and [illegible] and the garden and lawns [illegible] were overgrown and neglected. The three [illegible] I noticed that they had been made in Australia.

The reoccupation of the Naval Base raised many problems, the most urgent being the [illegible] the treatment of the sick and the reorganization of measures to control the [illegible] that had become accepted by the Asiatic community as a necessary evil. Dockyard [illegible] workmen of all descriptions with their wives and children had come into the Base, and it became necessary to treat the numerous cases of illness. The Asiatic Hospital was reopened on 19th September and the following statements on admission

[illegible] ipment and sp[illegible] in the total admis[illegible]

[illegible] 1945 to 30th Sept[illegible]

[illegible] 3 [illegible] ty-seven 4 [illegible]

[illegible] 1945 [illegible]

[illegible]

[illegible] was [illegible] main [illegible] resolve [illegible] mon[illegible]

[illegible]

[illegible] was [illegible] as in the [illegible] were iss[illegible] at the [illegible] samples [illegible]

Sewage disposal. [illegible] Base was [illegible] system for the [illegible] many places [illegible] expeditiously [illegible] naval personnel [illegible] sewage disposal [illegible] Imhoff tank w[illegible]

Scavenging. [illegible] areas of the Naval [illegible] quickly as possible [illegible] gallon [illegible] only recently [illegible] collected in a [illegible] will take a [illegible] time [illegible] these measures [illegible] these duties [illegible]

Malaria control. [illegible] control of larval breeding places [illegible] permanent residual measures. [illegible] ning system of the Naval Base [illegible] malaria control [illegible] anti malarial measures [illegible] these works [illegible] Following the intensive [illegible] with the cleaning [illegible] over the entire [illegible] Naval Base [illegible] Unfortunately [illegible]

all [illegible] that [illegible] no [illegible] [illegible] [illegible] their [illegible] [illegible] known [illegible] dangerous [illegible] the [illegible]

As [illegible] [illegible] [illegible] along, and spra[illegible] [illegible] [illegible] [illegible] [illegible] outside the Comm[illegible] [illegible] human be[illegible] [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	–	2	—	[illegible]	[illegible]	[illegible]	W
[illegible]	[illegible]	[illegible]	—	[illegible]	[illegible]	[illegible]	S
[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	[illegible]	S W
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S
[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	S
[illegible]	[illegible]	3	[illegible]	[illegible]	[illegible]	[illegible]	S W
[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	S W
[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	S W
[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	W
[illegible]	[illegible]	1	—	[illegible]	[illegible]	[illegible]	W
[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	S W

Totals—male 3 female 21

[illegible] Naval Base sprayed from the air with D.D.T. [illegible] following [illegible] and unfortunately, after its first [illegible] the Army [illegible] which was the only [illegible] broke down and remained [illegible] The [illegible] [illegible] air spraying [illegible] the [illegible] stages of occupation [illegible] control is established [illegible] I do not consider that it is now [illegible] in the Singapore Naval Base area. Indoor spraying with D.D.T. has been [illegible] all over the residential [illegible] and every building [illegible] by Naval personnel has been sprayed and will be treated [illegible] monthly intervals. [illegible] spraying with D.D.T. is of the greatest practical value [illegible] experience I have with it [illegible] convinced I am that this is so for not only does it [illegible] the anopheline mosquito [illegible] it rids buildings of the nuisance varieties almost completely, while it is 100 per cent [illegible] flies. In built up areas it may well revolutionize life in the East.

I have little doubt that with the measures already outlined the [illegible] of malaria in the Naval Base has been largely [illegible] The cases shown as being under treatment in the Asiatic Hospital are mainly [illegible] and [illegible] they are fresh infections I consider they have been infected in an outside area.

It should be pointed out, however, and I have pointed it out, that the Naval Base is and always will be a potentially malarious area. The price of freedom from malaria is like the price of freedom itself, eternal vigilance.

CONCLUSION

It is impossible to give a comprehensive list of the various sources from which I have [illegible] the material for this report. I interviewed numerous individuals, some of whom had been interned for over three and a half years and others for the last two years only. [illegible] of [illegible] conditions in Singapore during the occupation has been largely compiled from [illegible] given to me by Chinese members of the health department who worked during the whole period under the Japanese regime. The prisoner of war camps both in Singapore and Siam were described to me by Service personnel who had actually experienced them.

I should like to express my particular gratitude to the Flag Officer, Malaya, for placing [illegible] at my disposal; to my friend and teacher Colonel J. W. Scharff, Director of Medical Services, Malaya; to the municipal and rural health officers, Singapore; the Staff Medical Officer to the Flag Officer, Malaya; the Senior Medical Officer, H.M. Naval Base; and the [illegible] of the [illegible] units operating in Malaya. Last, but not least, to Warrant Wardmaster C. [illegible] who has helped me in innumerable ways.

Clinical Notes and Cases

A WALKING CALIPER FOR POTT'S FRACTURE

[illegible]

The walking [illegible] the plaster cast [illegible] to the skin [illegible] layer of plaster and [illegible] thick X rays [illegible] the stability of the [illegible] plaster and the reduction of the fracture [illegible]

The caliper shown in the accompanying photographs has neither of these [illegible] It is applied over the finished plaster cast [illegible] easily removed and replaced [illegible] It is moreover easily and simply [illegible] of strapping of durabrine [illegible] rubber pads and [illegible]

[illegible] on the photographs [illegible] the [illegible] Recently [illegible] Pott's [illegible]

[illegible] Medical Officer [illegible] Station [illegible] that this publication [illegible]

[illegible]

[illegible] R.N.V.R. [illegible] R.N.A.S. [illegible] R.N. [illegible] H.M.S. [illegible] supervising the making of these [illegible] workshops [illegible] Sub-Lieutenant [illegible] R.N. for taking the photograph.

EMBOLISM OF THE POPLITEAL ARTERY

By Surgeon Commander E. T. S. [illegible], R.N.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] hollow cylinder [illegible] inch in diameter and [illegible] inches [illegible] the distal end [illegible] inch [illegible] inch [illegible] the appearances [illegible] were [illegible] inch thicker than the rest of the [illegible] firmly organized clot [illegible] The stitches were removed on the tenth day [illegible] the [illegible] sixth week. In September his only complaint was an occasional [illegible] [illegible] had been walking for about half an hour [illegible] There was no clinical abnormality and he enjoyed [illegible] only shortness of breath [illegible] he was explored being an achalasia in the back of the right [illegible] of 166 years [illegible]

Discussion

Numerous cases of sudden occlusion of arteries of the extremities have been reported. A very [illegible] of the intermittent form of this has been given by Hopkins (1945) with a special [illegible] Bull's cases on record. It shows that the first recorded successful case was described by Mayo and Dunn in 1911 and the first success in England was described by Jefferson in 1925. At the time of Hopkins' paper only 41 cases had been recorded in England. McKechnie and Allen (1936) have described 60 cases of sudden occlusion of arteries of the [illegible] treated at the Mayo Clinic from 1924 to 1933. In these cases the chief source of [illegible] heart and the chief cause of sudden occlusion as the result of thrombosis was [illegible] in only three cases was the cause unknown. Jarvis (1943) reports a case [illegible] of the popliteal artery of indetermined origin. Dunne (1943) reported 11 cases [illegible] there [illegible] arteriosclerosis. Takats (1942) gives the main [illegible] the femoral and the aorta.

Vascular mechanism may be a post operative complication. In McKechnie and Allen's [illegible] 60 cases, eight were due to post operative thrombosis. Murkiss (1942) reports a case [illegible] occlusion of the popliteal artery following an operation for rupture of the mesentery.

Dunne believes that these cases of sudden occlusion which follow exertion should be [illegible] as due to hemorrhage into the intima wall causing [illegible] thrombosis. Fontaine (1944) in the cases of arteriography declares that the commonest [illegible] of blockage of atherosclerosis is the iliac or magnus hiatus and not the back of the [illegible] as is commonly supposed. Cubin informs me that he has localized by arteriogram [illegible] at this site and feels that it may well be the more common site of arrest of the [illegible] of the popliteal artery is found at operation being due to secondary clot [illegible]

[illegible] in this case can only be guessed at. It is certain that the embolus [illegible] structure of the popliteal artery was an old one. It was yellow white and [illegible] of the vessel rather than the red flabby fresh embolus.

BIBLIOGRAPHY

[illegible] 1944 [illegible] 19 N 4

[illegible] 1945 [illegible] 2 117

[illegible] 20 N 19

[illegible] 1944 [illegible] 37 626

[illegible] 1936 [illegible] 63 31

[illegible] 30 94

[illegible] Textbook of Surgery [illegible]

SUPPURATION IN A URACHAL CYST

[illegible]

A [illegible] was admitted to hospital on 14th June 1946 with the [illegible]

[illegible] his history. Abdominal or genito urinary trouble until 22nd May [illegible] the centre. The abdomen experienced only on micturition [illegible] days and then the pain was felt in the right iliac fossa [illegible] 7th June the pain in the right iliac fossa became constant [illegible] aggravated by movement. There was never [illegible] appearance. There was never [illegible]

[illegible] slightly coated

[illegible]

[illegible]

[illegible]

The bladder is developed from a [illegible] the allantois. Attends out into the [illegible] undergoes retrogressive changes and [illegible] leading from the apex of the bladder to the [illegible] may remain patent in whole or in part. [illegible] either the umbilical or bladder end [illegible] as a tense swelling in the mid line between the symphysis [illegible] not appear until early adult life.

Vaughan (1905) collected reports of 52 cases [illegible] patient and 7 of which were blind [illegible]

A urachal cyst is of clinical importance only [illegible] size or if the superimposition of sepsis. If this occurs [illegible] interstitial and tubercular peritonitis.

The production of an acute intestinal obstruction [illegible] portion of omentum and the small colon suggests the advisability [illegible] of omentum should it be necessary to [illegible]

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OUTBREAK OF ANTERIOR POLIOMYELITIS IN H.M.S. [illegible]

By Surgeon Lieutenant-Commander [illegible], R.N.

Five cases of anterior poliomyelitis occurred in H.M.S. [illegible] early in 1946. This is a morbidity rate of 6.67 per 1,000, which [illegible] of infection in children and much higher than the [illegible] epidemics.

DIARY [illegible]

[illegible] Naval Station Singapore [illegible] Diva [illegible] [illegible] division [illegible] the ship's [illegible] by 9840

[illegible] published

[illegible] Arrived at Colombo and disembarked [illegible]

[illegible] 1946 [illegible] Diphtheria ship Case B admitted to sick bay

[illegible] January 1946 [illegible] Case A was diagnosed as anterior poliomyelitis and admitted [illegible]

[illegible] January 1946 Arrived at Trincomalee where Case A was discharged to hospital

29th January 1946 Commencement of definite pre paralytic stage in Case B

30th January 1946 Case C admitted to sick bay

1st February 1946 Case D admitted to sick bay Case B diagnosed as anterior poliomyelitis and discharged to hospital Case C considered to be in the pre paralytic stage and discharged to hospital

P.M. Conference at hospital with medical specialist Naval health officer and pathologist Diagnosis of Case C confirmed Quarantine was not considered necessary but various preventive measures agreed upon

2nd February 1946 Case D considered to be in the pre paralytic stage and discharged to hospital Case E reported sick at 2000 was considered to be in the pre paralytic stage and discharged to hospital immediately This patient had been seen as a sick contact at 0830 that day when he had no symptoms

5th February 1946 Informed of the outbreak of anterior poliomyelitis at Singapore

SYNOPSIS OF CASES

Case I—A Boy aged 18 He complained sick on 22nd January 1946 with vague back pains temperature [illegible] was entered [illegible] been pyrexia [illegible] and treated on the [illegible] Next morning he had complete [illegible] He had slight stiffness of the lumbar muscles and he was discharged to hospital on [illegible] from sickness on 24th January 1946 There was a slight recovery and he was eventually [illegible] on the [illegible]

Case II—A Boy aged 18 Reported sick on 22nd January 1946 with pains in the chest on deep breathing [illegible] He had slight stiffness and abnormal and he was considered to be an intercostal fibrositis admitted [illegible] Temperature 99.2 F

26th January 1946 He was symptomless and his temperature was normal and he was considered fit to discharge [illegible] following day

27th January 1946 He complained [illegible] throat which was congested temperature 99.6° F

28th January 1946 Temperature was 100 F He had vomiting spasmodic abdominal pains and [illegible] and was considered to be in the pre paralytic stage [illegible] There was no evidence of meningitis or dysentery His temperature was 102 F and he complained of headache and stiff neck There was very slight [illegible] kernig

30th January 1946 His temperature was falling but there was still vomiting and generalized aching [illegible]

31st January 1946 His temperature was normal and he felt much better but still had pains in the back [illegible] morning temperature was 101.4 F

1st February 1946 He had pyrexia [illegible] the right arm and both legs and he was discharged to hospital

[illegible] by which time all other limbs were recovering

Case III—A Boy aged 18 Reported sick and was admitted to sick bay on 30th January 1946 when [illegible] complained of pain in back and stiff neck His temperature was 101 F and there was very slight [illegible]

[illegible] 1946 Condition improved He was discharged to hospital as a suspected case of [illegible] but there was no evidence of paralysis He did not feel any paralysis and was [illegible] hospital before [illegible] case

Case IV—A Boy aged 18 Reported sick and was admitted to sick bay on 1st February 1946 when [illegible] complained of pains in the neck back and limbs His temperature was then [illegible] with pain on flexion

[illegible] hospital [illegible] Case but not poliomyelitis but paralysis did [illegible] but [illegible] hospital [illegible] absolutely [illegible] He was returned to full duty

Case V—A Boy aged 18 He reported sick at 0800 on 2nd February 1946 complaining of headache [illegible] and stiff neck Temperature was then 101 F and there was slight neck rigidity [illegible] Kernig [illegible] weakness of the spinal muscles developed but [illegible] recovery [illegible] on the [illegible] day

[illegible]

[illegible] Did not go ashore at Singapore [illegible] a friend of [illegible] A but in a different mess and was possibly infected by A or by [illegible] such as A. This was a very confusing case. It was seven days after the sick had been in the first obvious paralytic signs and symptoms appeared. With more experience and in the presence of a known epidemic this case could have been diagnosed in the evening of 29th January.

Case C.—Did not go ashore at Singapore but was in the same mess as was Case B and was a friend of both A and B.

Case D.—Joined the ship 22nd January 1946. He was a stoker P.O. in the S.P.O.'s mess and had no contact with and did not know the other cases. He had just arrived from Mauritius and escaped the epidemic there and must have been infected by a carrier in the ship's company.

Case E.—Went ashore at Singapore was in the same mess as was Case A.

About 100 of the draft slept and messed in the cinema but used the same bathrooms and heads as did the ship's company. The remainder were distributed amongst the various messes. None of the passengers developed anterior poliomyelitis so far as I am aware. This epidemic was never before I was informed that there was an epidemic at Singapore.

Principal clinical features.—Occipital headache, neck pains and stiff neck were common to all cases but the first. Temperature varied from 100° F. to 102° F.

Preventive Measures

Daily inspection of close contacts, but this was of no value (*see* Case E.).

Gargling twice daily by the whole ship's company, probably quite useless, but good for morale.

Stopping all drafting to and from the ship.

Broadcast throughout the ship by the Senior Medical Officer on 2nd February 1946, this resulted in all minor respiratory infections being reported and was considered to be good for morale.

Officers and men forbidden to attend dances and cinemas also unless in the open air, ship visiting discouraged, not possible to enforce these without full quarantine.

Reduction of complement on board, thereby reducing the risk of airborne infection, one third of the ship's company at a time were sent to an isolated rest camp.

Appointment of a second medical officer, but he arrived too late to see the first case.

Reviews.

Directory of Guy's Men (1946).

We have received the 1946 edition of the Directory of Guy's Men from the Lancashire Office, Guy's Hospital. It contains a very complete alphabetical list of Guy's men together with an extensive bibliography. The price is 5s. 6d., and a subscription to *Guy's Hospital Gazette* and Directory of Guy's Men is 12s. 6d. All subscriptions should be sent to the Manager, *Guy's Hospital Gazette*, Guy's Hospital, London Bridge, S.E.1, and cheques should be crossed and made payable to *Guy's Hospital Gazette*.

Manson's Tropical Diseases. Edited by Philip H. Manson-Bahr. Twelfth Edition. 1945. Pp. 1068, 416 figures in the text, 16 maps and 28 charts, 17 colour plates, 9 half tone plates. London: Cassell & Co. Price 42s. 0d.

There can never be no better value than this classic monographs on tropical affections. First published in 1898, it has been the inspiration for generations of Service and Colonial medical officers, and it has taken a leading part in securing British supremacy in the science and practice of tropical medicine. In this twelfth edition there have been extensive changes and additions, but the editor has been at constant pains to maintain the excellence of this work and to keep it entirely up to date. Manson's Tropical Diseases is a publication in the library of all Naval medical officers.

Rheumatic Diseases. By C. D. Kershy, M.A., M.D., F.R.C.P. Second Edition. 1945. Pp. 120. 18 plates. London: Heinemann. Price 15s. 6d.

This small manual book deals with all forms of rheumatic diseases, including acute arthritis, fibrositis and [illegible]. A clinical approach is based on pathological considerations of these conditions and treatment is [illegible]. The writer [illegible] his hobby horse with regard to the treatments and gives in

[illegible] By Hamilton Bailey. 1945. Pp. 338. 11 pages index. 531 illustrations. Edinburgh [illegible]. Price 21s. 0d.

This book, beautifully produced on [illegible] paper, [illegible] illustrated as well as black and white illustrations, contains 83 demonstrations by various surgeons. Mr. Hamilton Bailey in his writing in a lucid way describes them as "running commentaries" [illegible] personions. His book has a wealth of information detail yet it is written in such a way that no student [illegible] find it enjoyable. It is an essential for all students, for surgical nursing and [illegible] by a born teacher.

SYNOPSIS OF OBSTETRICS AND GYNAECOLOGY. By Alex. W. Bonne, F.R.C.S. Ninth Edition. 1945. Bristol: Wright. Price 21s. 0d.

This synopsis of obstetrics and gynaecology is written in such a form and is invaluable to a student preparing to take an examination on the subject. It is set out in such a way that the points may be seen and memorized in a glance, and the very efficient index is an added facility. The book is eminently readable and the illustrations are clear and helpful.

It is recommended to the Service medical officer who wishes to brush up his knowledge of obstetrics and gynaecology before returning to civilian practice.

TEXTBOOK OF PUBLIC HEALTH. By W. M. Frazer and C. O. Stallybrass. Fourth Edition. 1946. Pp. x + 971. Edinburgh: Livingstone. Price 25s. 0d.

Every Naval medical officer must possess a sound knowledge of preventive medicine. A good book on the subject is one of the essentials of his library and travelling about the world as he does he will find constant reference to the subject a necessity. This textbook of public health by Frazer and Stallybrass now in its eleventh edition supplies such a want.

It must not be forgotten however that this is a textbook of limited size. There is no reference to Naval ship hygiene and the chapter on ventilation, treating the elements of the subject. High cubicity in ships, especially in extremes of climate, is a subject much in its infancy and Naval medical officers should make a close study of the sailor's environment in terms of effective temperature and should be well acquainted with such instruments as the whirling psychrometer, the katathermometer and surface and air thermometers. Similarly the section on the principles of dietetics implies a knowledge of physiology and bacteriology which must be obtained elsewhere.

As regards indirect radiography (p. 400) it might be pointed out that the Royal Navy was mainly responsible in advance of any other Service in introducing mass miniature fluorography.

Another important subject to cheal on briefly is occupational hygiene: industrial medicine is coming much to the fore and it must be remembered that the Admiralty has many civilian employees as well as ship's companies exposed to occupational hazards. It is noted that lead anaemia is omitted from the list of notifiable industrial diseases (The Factories (Prescribed Diseases) Regulations 1942).

For such in this textbook provides the essential to all work of preventive medicine. The Naval medical officer requires much greater knowledge of certain sections of the subject.

LEAGUE OF NATIONS HANDBOOK OF INFECTIOUS DISEASES. Third Edition. 1945. Pp. 341. League of Nations Publications (Health). Contacts in Bucharest under the late Professor I. Ionescu-Mihaesti and Professor M. Ciuca. Price 5s. 0d.

This book is divided into three parts.

Part I is an account in condensed form of the diseases and parasitic diseases of man, diseases caused by bacteria, filter passing viruses, protozoa and metazoa and fungi, being grouped into separate sections. A brief account is given of each, between the salient points of a, incubation period, mode of infection and infectious period, clinical aspects, prognosis, channel of elimination, resistance of germs, as to the body, laboratory diagnosis, treatment and prophylaxis being listed.

Part II is an outline of general epidemiology. Diagnostic biological tests are described and the tuberculin test, Dick test, Schick test, Frei test, Kahn test, Shick reactions in tuberculin, Schick, Dick and Frei tests. Prophylactic immunization and treatment by vaccinal or serum are described. There are also chapters dealing with treatment by sulphonamides and penicillin. These are very brief and that on penicillin is already out of date in many respects. The important advances in this form of therapy, which are likely being described in the interim.

Part III deals with the collection of pathological specimens and the capture of insect vectors. The bacteriological examination of water and methods of purification are also described.

This an excellent compact book of reference and it should prove most useful to medical officers in the Service and those engaged in public health work. One feels that the worth of the first entitles the volume to a better binding.

THE PROBLEM OF LUPUS VULGARIS. By Robert Allen. 1946. Pp. 63. Illustrated. Edinburgh: Livingstone. Price 15s. 0d.

Lupus vulgaris is not so frequent but there can be few many diseases which cause greater social distress to the sufferer. This little book with its minor flaws is welcomed. The clinical features, pathology, drugs, surgery are summarily described and illustrations—including several in natural colour—show well the various manifestations.

The author reminds us that lupus vulgaris is a tubercular stigma and therefore that general hygienic measures are required. The various methods of local treatment are viewed on their merits with clarity

[illegible]

[illegible]

[illegible]

[illegible]

TEXTBOOK [illegible] Edition 1941 [illegible] 4s.

It is intended [illegible] 1922 [illegible] The [illegible] like [illegible] steady [illegible] and [illegible] so that [illegible] Simony [illegible] Edition.

ANATOMY [illegible] Illustra[illegible] Hemming [illegible]

[illegible] provided a [illegible] other book [illegible] illustrated [illegible] to desire [illegible]

Text [illegible] hurry and [illegible] bewilderment is made [illegible] very [illegible] other works [illegible] On the other hand [illegible] the [illegible] be [illegible] the [illegible]

[illegible] approach [illegible] This [illegible] based from the [illegible] view but the detail [illegible] certain [illegible] series.

One of the objects [illegible] to provide the surgeon with a handy [illegible] hand approaches [illegible] before and having a less [illegible] seem likely that most students [illegible] would prefer to consult a fuller work [illegible] book of operations [illegible] operation.

The book will [illegible] reference by onlookers for example [illegible] familiar with the anatomy [illegible] ordinary known [illegible] cases equally [illegible] grasp the steps of surgical procedure and the [illegible]

As [illegible] Informative as a [illegible] appears [illegible] to be [illegible] talk.

TEXTBOOK OF MEDICAL TREATMENT By Various Authors Edited by D M Dunlop [illegible] and J W McNee [illegible] the late A J Clark Fourth Edition 1946 [illegible] 923 Edinburgh Livingstone [illegible] 40 0d

This work originally appeared in [illegible] the outbreak of the war and its success during [illegible] of the past seven years is [illegible] The authors have shared the difficulties of medical [illegible] and textbook compilers in that the [illegible] has been somewhat of an embarrassment [illegible] Though [illegible] in many diseases its exact status could not be [illegible] with precision at the time [illegible] This textbook is almost certainly the product [illegible] school [illegible] the United Kingdom [illegible] perhaps the [illegible] successful reference book [illegible]

A PRACTICAL HANDBOOK OF MIDWIFERY [illegible] PSYCHOLOGY FOR STUDENTS AND [illegible] By W T Houlihan [illegible] and C Kennedy [illegible] Edition 1946 [illegible] 388 Edinburgh Livingstone [illegible]

This book [illegible] been [illegible] The facts are [illegible] and the illustrations are [illegible] helpful and the treatment is [illegible]

Science doctors returning to civil practice will appreciate the book.

We have received the following publications for which we wish to express our thanks —

[illegible] *Hospital Gazette* *St Mary's Hospital Gazette* *Middlesex Hospital Gazette* *St Thomas's Hospital Gazette* The Broadway Westminster *Journal of Durham Gazette* *Journal of the Royal Army Medical Corps* The Military Surgeon *Journal of the Royal Sanitary Institute* *British Medical Bulletin* *The Clinical Journal* *Medical Times and Gazette* *The Practitioner* *Dublin Hospital* *Bulletin* *Journal of Laryngology and Otology* *Medical Science* *Archives Belges de Médecine* *Bulletin International* *Revista de Sanidad Militar* *Journal of Venereal Disease Information* British Legion News Flashes

Notice.

THE CENTRAL COUNCIL OF SICK BERTH STAFF ASSOCIATIONS AND THE CHATHAM PLYMOUTH & RETIRED MEMBERS ASSOCIATION

[illegible] 1943 the Sick Berth Staff to obtain employment on [illegible] Civil Life [illegible]

[illegible] own initiative

[illegible] S B Staff Club

National Association for Employment of Ex Regulars

[illegible] Exchange

[illegible] inquiries experienced were lack of suitable means [illegible] employers and the fact that prospective Employers knew little of the [illegible] Sick Berth ratings

(3) The posts offered through the above named channels were [illegible] and not remunerative

(4) In 1930 a Central Council was formed with the following objects

(i) To find new avenues of employment in the Nursing Profession and allied occupations

(ii) To promulgate by various means the fact that the S B Staff were highly trained and experienced Male Nurses and were available for employment on return to Civil Life

The activities of the Central Council did not in any way interfere with the general work of the local Associations The Local Associations continued to be independent of each other and also of the Central Council Employers were advised when vacancies occurred to apply to the Secretary of the Local Associations or the Central Council whichever was most convenient When notice of vacancies was received by the Central Council the information was sent simultaneously to the Local Secretary Chatham Portsmouth and Plymouth who informed prospective candidates of these vacancies

The Work of the Central Council

A large number of cards setting out the qualifications of S B Ratings and their suitability for various appointments were forwarded to many Government Departments Local Government Medical Services Industrial Organizations Municipal and Voluntary Hospitals and private practitioners

Representations were made to the National Association for the employment of ex Regulars R N Benevolent Trust British Legion and other organizations interested in the resettlement of ex Service men

The finding of suitable and properly paid appointments for ex S B Staff on resettlement in civil life is but a small recognition of their loyal service to the Navy There is no better form of benevolence than to be able to place these men in permanent employment when they leave the Service

It is anticipated that with the introduction of the new National Health Service Bill the work of the Central Council will be greatly increased

Unfortunately owing to death ill health and old age none of the original founders of the Central Council is now available to carry on the work and Medical Officers serving or retired R N or R N V R are urgently required to fill the vacant offices.

An urgent appeal to all those who are interested and willing to help is made to communicate with Surgeon Captain M H Knapp R N (retd) c/o Medical Department of the Admiralty 64 St James's Street S W 1

ERRATUM— Blood Transfusion as a Naval Problem July 1946
Page 184 Summary line 8 *should read* were received within 10 to 20 hours after wounding

News of the Service

R.N.V.R. OFFICERS' COMMEMORATION FUND DINNER TO [illegible]

A Dinner was held at the R.N.V.R. Club, 52, Pall Mall, S.W.1, on Wednesday [illegible] the R.N.V.R. Officers' Commemoration Fund, sponsored by the Club.

HISTORY OF THE R.N.V.R. CLUB

In 1943 a number of junior R.N.V.R. Officers decided to get together an [illegible] Officers could meet in London and make their temporary home. Premises were [illegible] in the war at the Marlborough Club building, at 52, Pall Mall, S.W.1. The [illegible] entirely by R.N.V.R. Officers, and after many difficulties at the beginning, the [illegible] has ceased to receive the Members, but was bombed on the eve of its opening, on [illegible] February. Then the building was severely damaged. However, the Club has kept [illegible] the work was put in hand to repair the damage at once. The Club was opened in [illegible] 1944 by Mr. A. V. Alexander, First Lord of the Admiralty.

The object of the Club was [illegible] cheap and clean sleeping accommodation [illegible] amenities for R.N.V.R. Officers stationed in or passing through London. Membership [illegible] of all branches, and the Membership has steadily risen to the present figure, 1,850. [illegible] was simple, double decker bunks, but this has been filled every night since its opening. [illegible] Reading Room and Bars are always crowded.

But in the end of the war the Marlborough Club indicated that it could [illegible] Allen an extensive search for a suitable premises were found at 98, Hill Street. But the [illegible] of these premises went beyond the financial ability of R.N.V.R. Officers, who are [illegible] young and far from rich. It was accordingly decided to raise a Commemoration Fund [illegible] —

(1) To purchase and equip the new premises.

(2) To start a much needed Welfare Fund for R.N.V.R. Officers [illegible]

The Admiralty has given the project full support, and at its suggestion the R.N.V.R. Club, the R.N.V.R. (Anchorage) Club, formed in 1919, have amalgamated [illegible] R.N.V.R. Officers' organization. The Fund will be held by the following, [illegible]

Commodore The Rt. Hon. Earl Howe, P.C., C.B.E., T.D., R.N.V.R.

Commander John Campbell, R.N.V.R.

Lieutenant The Hon. W. W. Astor, R.N.V.R.

Lieutenant A. Leon Boyd, R.N.V.R., M.P.

In August the post-war project for getting new premises and [illegible] Welfare Fund was [illegible] publicately to R.N.V.R. Officers, since then 2,000 new Members have joined, many [illegible] received. The Commemoration Fund will be formally published by the [illegible] the First Lord, Mr. A. V. Alexander, who is at the Paris Peace Conference.

This will be the only appeal made by the R.N.V.R. [illegible] the Fund for R.N.V.R. and the Welfare Fund. The Club Magazine, The Sparks, Secretary [illegible] the journal of the R.N.V.R. Association.

The Fund is commending itself especially to those who were killed in the war, [illegible] R.N.V.R. who are killed at sea has been a substantial sum to furnish a room at the Club [illegible]

During the war the R.N.V.R. provided 80 per cent. of all Naval Officers. [illegible] the Club and its Welfare Fund will be a permanent and living memorial to them.

It is however quite clear that the target sum, £275,000, cannot be reached without the generous aid of many wealthy Retired Industry and Financiers. [illegible] talk. It is hard to think wishful make donations.

All enquiries should be forwarded to Commodore Earl Howe, P.C., C.B.E., T.D., R.N.V.R., Club, 52, Pall Mall, London, S.W.1, and crossed "R.N.V.R. Commemoration Fund."

NORTH PERSIAN FORCES MEMORIAL

We have been asked by the War Office to announce that the Naval Personnel [illegible] will be awarded again next year when a lapse of nine years due to the war. The Medal [illegible] in 1943 by officers of the Royal Army Medical Corps and Indian Medical Service [illegible] Naval Personnel serving during the Great War. They wished to commemorate the [illegible] and overcrowding, the study of Tropical Medicine and Tropical Hygiene.

The Memorial takes the form of a silver medal and is awarded annually for the best paper [illegible] tropical medicine or tropical hygiene published during the year, [illegible] 31st December by any medical officer of any twelve years' service in the Royal Navy, Royal Naval Medical Corps, Royal Air Force, Indian Medical Service, or Colonial Medical Service.

Hitherto, so far as the latter part of the year following that in which the paper [illegible] the Club and the Medical Committee consider the paper, the medal [illegible] the following year.

Only officers and Ratings of Short Service engagement are eligible for the award.

[illegible] ALEXANDER AND PARKES MEMORIAL PRIZE FUND

[illegible] following, prizes are open for award in 1947 after a lapse of [illegible]

[illegible] SIMAN MEMORIAL PRIZE

[illegible] medal and [illegible] £30 to the individual Officer of the Royal Army Medical [illegible] still in the active list of the Army Dental Corps for the [illegible] in the Allied Sciences or in connexion with the general duties [illegible] Army Dental Corps brought to the notice of the Prize Fund [illegible] and completed within the year. The prize is open to Officers [illegible] the Royal Army Medical Corps or The Army Dental Corps.

[illegible] ALEXANDER MEMORIAL PRIZE

[illegible] £70 to the individual Officer of the Royal Army Medical [illegible] an officer removed from the Corps but still on the [illegible] has taking the work done most for promoting the [illegible] Military Surgery, Military Hygiene or Military Pathology. [illegible] reports of investigations of value from the point [illegible] published in one or other of the various [illegible] be considered as justifying an Officer to be [illegible]

[illegible] MEMORIAL PRIZE

[illegible] £40 to the most deserving Medical Officer not [illegible] pay [illegible] Prize Committee who by [illegible] the study of Naval or Military Hygiene [illegible] reports, investigations of value [illegible] Pathology or other of the various Medical [illegible] justifying an Officer to be recommended [illegible]

[illegible] Medal prize and [illegible] Officers in the staffs of [illegible] Medical Branch of the Army School of Hygiene.

[illegible] that the following prizes are [illegible] 1946 [illegible] drawn: the attache [illegible] will be paid shortly to the Medical Officer [illegible] Medical Officers serving in your Command.

[illegible] Medical Branch
[illegible] Medical Branch
[illegible] Prize

[illegible] original articles [illegible] Secretary R.A.M.C. Prize Committee, R.A.M.C. Depot, Mill[illegible] 1946.

J. H. Davies, Lt.-Col.
Hon. Secretary
R.A.M.C. Prize Committee.

OBITUARY

[illegible] *Lt.-Col. C. R.* MRCS, LRCP. [illegible] Bournemouth [illegible] 1886. Promoted to Staff Surgeon 30th April 1898. Promoted [illegible] 20th August 1905. Promoted to Surgeon Captain 17th April 1917. Promoted [illegible] Colonel 18th February 1920, when he served as Medical Officer in Charge, R.N. Hospital [illegible] during the Great War. Married in 1911 [illegible] by all who served under him.

[illegible] *Surgeon Rear-Admiral* MRCS, LRCP, RN (retired) died at Bournemouth on [illegible] 1876. [illegible] Staff Surgeon 15th May 1904. Promoted to Surgeon 15th May 1907. Promoted to [illegible] 1908. Retired 1st January 1922, but was given active employment [illegible] during the Boer War and joined during the First World War.

[illegible] *Surgeon* RN (retired) died on the 15th August 1946 in Edinburgh. Born [illegible] 1878. He had his medical training at Aberdeen University and qualified in 1901. He [illegible] RN MB, ChB as Surgeon in November 1904 and was placed on the Retired List with [illegible] pay in February 1928. He saw service during the 1914-18 war with the Home [illegible] Hospital Carriers.

[illegible] Surgeon Captain Donaldson served with First Aid Parties attached to the [illegible] Home Organization. T. N. D. writes —

[illegible]

HONOURS

[illegible]

[illegible] Williams [illegible]

[illegible] Lieutenant-Commander [illegible]

[illegible]

[illegible]

Surgeon Lieutenant [illegible] in War in the Far East

[illegible]

Miss A. Ralph [illegible]
Miss Lilian Phillips [illegible]

[illegible]

Miss M. [illegible] Acting Matron [illegible]

[illegible]

Miss K. M. [illegible]
Miss N. M. [illegible]
Miss I. M. [illegible]
Miss K. M. [illegible]
Miss K. J. [illegible]
Miss J. [illegible]
Miss M. M. Stewart [illegible] Reserve
Miss M. J. [illegible] Reserve
Miss B. Smith [illegible] Reserve
Miss F. M. [illegible] Reserve
Miss M. C. Whitby [illegible] Reserve

PROMOTIONS

Acting Surgeon Lieutenant-Commander G. J. Potts [illegible] Commander with date [illegible] 1st November 1945

Acting Surgeon Captain R. C. May promoted to Surgeon Captain [illegible] 1946

Acting Surgeon Captain C. [illegible] promoted to Surgeon Captain [illegible] 1946

Surgeon Lieutenant-Commander (D) A. A. Gardner promoted to [illegible] Commander (D) [illegible] appointed 25th July 1946

Surgeon Commander (D) (retired) A. Macpherson promoted to [illegible] (D) on lifelined List 8th May 1946

Surgeon Lieutenant-Commander C. S. Thomas promoted to Surgeon [illegible] 1st March 1945

RETIREMENTS

Surgeon Rear Admiral (Retired) L. Warren released 14th March 1946 [illegible]

Surgeon Vice Admiral Sir Richard A. K. Francis [illegible] (Retired)

Surgeon Lieutenant Commander A. S. Hepburn RN [illegible]

Surgeon Captain C. H. Rickard (Retired) Mediterranean [illegible] 8th May 1946

Surgeon Captain [illegible] Vickery (Retired) released 8th June 1946 [illegible]

Surgeon Commander A. W. A. Osborn placed on retired list [illegible] 1946

Surgeon Captain E. M. Bryar (Retired) released 18th June 1946

Surgeon Captain E. Cook (Retired) to be released [illegible]

Surgeon Commander [illegible] Breece placed on retired list [illegible] 23rd August 1946

Rear Admiral (Retired) R. K. Birch released (on reach [illegible]) 30th June 1946 to [illegible] Surgeon Rear Admiral (Retired))

Surgeon Lieutenant Commander S. [illegible] RN (Retired) [illegible] America 18th February 1946 (amended)

Surgeon Lieutenant Commander (D) L. L. Fran released [illegible] 31st January 1946 (amended) in Australia

Surgeon Commander A. L. McDonald placed on retired list (not fully [illegible]) 20th September 1946

Surgeon Captain H. E. Scargill (Retired) released 15th July 1946

Surgeon Vice Admiral (Retired) Sir Percival [illegible] Nicholson [illegible] 10th July 1946 [illegible] Surgeon Vice Admiral (Retired)

Surgeon Captain [illegible] Cook (Retired) released 3rd July 1946 (amended)

Surgeon Lieutenant Commander R. Vaughan James RN (Hungry) released 18th December 1945 (amended)

Surgeon Captain H. B. Parker (Retired) released 9th July 1946

Surgeon Rear Admiral (Retired) C. V. Griffiths released 1st July 1946

Surgeon Commander (D) H. H. V. Barnes placed on retired list (age) and released 25th July 1946

Surgeon Commander W. H. A. Sinclair-Laubb released 24th July 1946

Surgeon Captain J. M. Gordon (Retired) released 24th July 1946

Surgeon Captain E. C. Patterson (Retired) released 8th July 1946

Surgeon Captain H. M. Lamplugh placed on retired list (age) and reappointed 15th August 1946

Surgeon Captain [illegible] to S. [illegible] (Retired) release [illegible] reappointed (amended)

Surgeon Captain V. C. Anderson (Retired) released 14th August 1946

[illegible]
26th October 1946.

Surgeon Lieutenant H. H. K. [illegible] (Retired) [illegible] 4th August 1946.

TRANSFERS TO THE PERMANENT LIST

Surgeon Commander N. S. Hepburn (Emergency) transferred [illegible] 1946 [illegible] Lieutenant Commander 18th August 1946.

Surgeon Lieutenant [illegible] (Emergency) transferred [illegible] 1946 with [illegible] Lieutenant Commander 1st March 1947.

Surgeon Lieutenant [illegible] G. Wason (Emergency) [illegible] retired [illegible] a Surgeon Lieutenant [illegible] 16th August 1946.

ROYAL NAVAL VOLUNTEER RESERVE

PROMOTIONS

Temporary Surgeon Lieutenant [illegible] R.N.V.R. West [illegible] be Temporary Surgeon Lieutenant Commander [illegible] and reappointed 14th May 1946.

Temporary Surgeon Lieutenant N. J. McDougall to be Temporary Surgeon Commander [illegible] in temporary rank 16th December 1945.

Temporary Acting Surgeon Lieutenant Commander [illegible] to be Temporary Surgeon Lieutenant Commander and reappointed 2nd May 1946.

Temporary Acting Surgeon Lieutenant [illegible] to be Temporary Surgeon Lieutenant Commander [illegible] reappointed 27th May 1946.

Temporary Acting Surgeon Lieutenant Commander [illegible] to be Temporary Surgeon Lieutenant Commander as from 1st June 1946.

Temporary Acting Surgeon Lieutenant [illegible] to be Temporary Surgeon Lieutenant Commander [illegible] reappointed 2nd July 1946.

Temporary Acting Surgeon Lieutenant Commander [illegible] to be Temporary Surgeon Lieutenant Commander [illegible] 19th July 1946.

Temporary Acting Surgeon Lieutenant Commander [illegible] to be Temporary Surgeon Lieutenant Commander [illegible] reappointed 19th July 1946.

Temporary Acting Surgeon Lieutenant Commander [illegible] to be Temporary Surgeon Lieutenant Commander [illegible] reappointed 22nd July 1946.

Temporary Acting Surgeon Lieutenant Commander [illegible] to be Temporary Surgeon Lieutenant Commander (D) under [illegible] reappointed 2nd July 1946.

Temporary Surgeon Lieutenant [illegible] to be Temporary Surgeon Lieutenant Commander [illegible] reappointed 19th July 1946.

Temporary Surgeon Lieutenant D. J. MacMillan to be Temporary Surgeon Lieutenant Commander [illegible] and reappointed 22nd July 1946.

Surgeon Commander (Retired) H. Tugwell [illegible] 8th May 1946.

Surgeon Lieutenant Commander [illegible] list as from 8th May 1946.

Surgeon Lieutenant [illegible] (Retired) [illegible] as from 8th May 1946.

Temporary Surgeon Lieutenant D. H. [illegible] (D) as from 14th May 1946.

Temporary Acting Surgeon Lieutenant [illegible] to be Temporary Surgeon Lieutenant Commander [illegible] reappointed 24th July 1946.

RETIREMENTS

[illegible]

Surgeon Captain [illegible] R.N. [illegible] 1946.

Surgeon Commander [illegible]

Captain (ante [illegible])

Surgeon Commander [illegible]

Surgeon Commander H. W. [illegible]

Surgeon Commander (D) [illegible]

Temporary Surgeon Captain W. F. W. [illegible]

Acting Surgeon Commander R. H. [illegible] (Retired) 8th January 1946.

Surgeon Lieutenant Commander [illegible] R.N.V.R. [illegible] commander (Retired) 23rd October 1946 [illegible]

Surgeon Lieutenant [illegible] W. H. [illegible] Commander (Retired) 3rd March 1946 (ante [illegible])

Surgeon Lieutenant [illegible] Surgeon [illegible]

V

Surgeon [illegible] Hanan released 25th September 1946

Temporary [illegible] Lieut. A. T. Roberts released 2nd September 1946

TRANSFERS TO PERMANENT LIST

[illegible] (D) W. J. Stanley transferred to [illegible] 1941 [illegible] Commander (D) [illegible] 1946 and to [illegible]

Temporary [illegible] (D) L. W. King, [illegible] RN, 14th [illegible] Lieutenant Commander (D) [illegible] 19th July 194[illegible]

Temporary [illegible] H. [illegible] transferred to Permanent List [illegible] rank [illegible] 12th July 1940 and [illegible] rank [illegible]

[illegible] (D) [illegible] transferred to Permanent List [illegible] 19th July 1946 and [illegible]

[illegible] W. [illegible] Wilson transferred to Permanent List [illegible] 1946 [illegible] 17th October 1941 [illegible] acting rank [illegible]

Temporary [illegible] A. S. [illegible] transferred to Permanent List [illegible] June 1946 with [illegible] 1941 [illegible]

Temporary [illegible] Master transferred to Permanent List RN 14th June 1946 with seniority [illegible]

Temporary [illegible] R. [illegible] transferred to Permanent List RN 14th June 1946 with [illegible]

[illegible] (D) R. [illegible] transferred to Permanent List RN 14th June 1946 with seniority [illegible]

Acting Surgeon [illegible] R. S. [illegible] transferred to Permanent List RN 1st June 1946 [illegible] Commander with seniority of 12th March 1945

Acting Surgeon [illegible] A. S. Smith [illegible] transferred to Permanent List RN 14th June 1946 [illegible] 14th June 1940 (to continue to serve in acting rank [illegible])

Surgeon [illegible] J. F. Morgan transferred to Permanent List 1st June 1946 with seniority as [illegible] 1945

Surgeon [illegible] M. F. Clayville transferred to Permanent List 1st June 1946 with seniority as [illegible] November 1942

Surgeon [illegible] transferred to Permanent List 1st June 1946 with seniority as [illegible] 1943

[illegible] R. S. McDonald transferred to Permanent List 1st June 1946 with seniority as [illegible] April 1943

[illegible] A. W. Hagen transferred to Permanent List 1st June 1946 with seniority as [illegible] February 1941 and H[illegible]

Surgeon [illegible] M. Bain transferred to Permanent List 1st June 1946 with seniority as Surgeon [illegible] 2nd October 1941

GRANTED EXTENDED SERVICE COMMISSIONS, &c

[illegible] Commander J. M. Gillespie

[illegible] Surgeon Lieutenant-Commander J. H. D. Taylor

[illegible] Lieutenant J. S. Word

[illegible] Lieutenant V. O. Foster

[illegible] Lieutenant J. W. Emke

[illegible] Surgeon Lieutenant C. A. Burns

Granted Extended Service Commissions for five years as from 1st June 1946

[illegible] Lieutenant W. S. Johnston re-entered with adjust. seniority as Surgeon Lieutenant [illegible] granted Extended Service Commission of five years from 1st June 1946

[illegible] Lieutenant W. L. Crocker granted Extended Service Commission of four years [illegible] 1946

[illegible] Lieutenant W. Stephen granted Extended Service Commission of five years from [illegible] 1946

[illegible] Commander (D) W. S. Turnbull granted Extended Service Commission of four [illegible] 1946

[illegible] (D) D. H. H. Hytz granted Extended Service Commission of four years from [illegible]

[illegible] Lieutenant D. J. Aitken granted Extended Service Commission of five years from [illegible]

[illegible] Lieutenant V. J. Sangster granted Extended Service Commission of five years [illegible]

Captain L. C. Rogers reinstated on Permanent List of the R.N.V.R. Division [illegible] 1946 in rank of Surgeon Commander with seniority of 31st December 1942

[illegible] Lieutenant C. H. Cunson granted Extended Service Commission of five years [illegible] 1946

[illegible] (D) R. S. Farwell granted Extended Service Commission of four years from [illegible]

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

RETIREMENTS

[illegible] (Retired) Miss A. Ralph released 1st July 1946
[illegible] Sister Miss E. M. Baster released abroad 21st February 1946 (amended date)
[illegible] Sister Miss C. W. Cooper released 9th July 1946

QARNNS RESERVE

[illegible] Sister Mrs B. M. Dunall released 20th May 1946
[illegible] Sister Miss K. D. de S. Tinland released abroad 31st May 1946
[illegible] Miss I. J. Tawn released abroad 15th January 1946 (amended)
[illegible] Miss D. I. Hume released 11th May 1946
[illegible] Sister Miss G. A. Rawlins released 11th July 1946
[illegible] Sister Mrs M. M. Stewart released 18th July 1946

TRANSFERS TO PERMANENT SERVICE

Reserve Nursing Sister Miss B. B. Willman
Reserve Nursing Sister Miss M. K. Walshe
Reserve Nursing Sister Miss J. Cunningham
Reserve Nursing Sister Miss M. S. Philbins
Reserve Nursing Sister Miss M. A. Larry
Reserve Nursing Sister Miss A. M. Gold
Reserve Nursing Sister Miss I. M. Blenkin
Reserve Nursing Sister Miss E. Johnson
Reserve Nursing Sister Miss J. Doolan
Reserve Nursing Sister Miss D. V. Longhurst
Acting Reserve Senior Sister Miss S. K. B. Rolland
Reserve Nursing Sister Mrs J. L. Simpson
Reserve Nursing Sister Mrs M. E. Smith
Reserve Nursing Sister Miss S. I. Stromwell — transferred to Permanent Service 11 September 1946
Reserve Nursing Sister Mrs M. Fuller
Reserve Nursing Sister Miss C. M. Tugwell
Reserve Nursing Sister Miss K. M. Ramsey
Reserve Nursing Sister Mrs L. M. Richardson
Reserve Nursing Sister Miss M. A. E. Elyard
Nursing Sister Miss S. M. Bulkeley
Acting Reserve Senior Sister Mrs A. D. C. Tait
Reserve Nursing Sister Mrs M. S. Cuthbertson Dike
Reserve Nursing Sister Miss I. Macdonald
Reserve Nursing Sister Miss J. I. MacLennan
Reserve Nursing Sister Mrs M. J. Merrifield
Reserve Nursing Sister Mrs E. S. Merrifield
Reserve Nursing Sister Miss M. Spurr
Reserve Nursing Sister Miss E. B. Hall
Reserve Nursing Sister Miss C. E. Joy

Surgeon Captain F. Moyna Rewan, R.N. (Ret.) has acted [illegible] since the death of Miss Rich at Colmore House, Knowle Hill Nursing Home, Dorset.

Notice

The office of "The Journal of the Royal Naval Medical Service" has now returned to Royal Naval Hospital, Haslar, Gosport

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THE EDITORS invite Medical Officers to send in Original Papers on professional subjects travel personal experiences, &c Items of news and matters of interest to the Naval Medical Service will be welcomed from ships and establishments on home and foreign stations

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The Harvard system should be employed for bibliographical references, these references being arranged in alphabetical order of the authors names at the end of the contribution thus Smith F G (1935) *J roy nav med Serv*, **22**, 53 In the text a reference to a publication should be cited by giving the author and in brackets the date thus Smith (1935) believed this to be due, etc

All Communications should reach the Editors on or before the First of the Month preceding the date of issue Unless clearly written, they should be typed in order to avoid mistakes and they should be addressed to the Editors JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE, Royal Naval Hospital, Haslar, Gosport

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